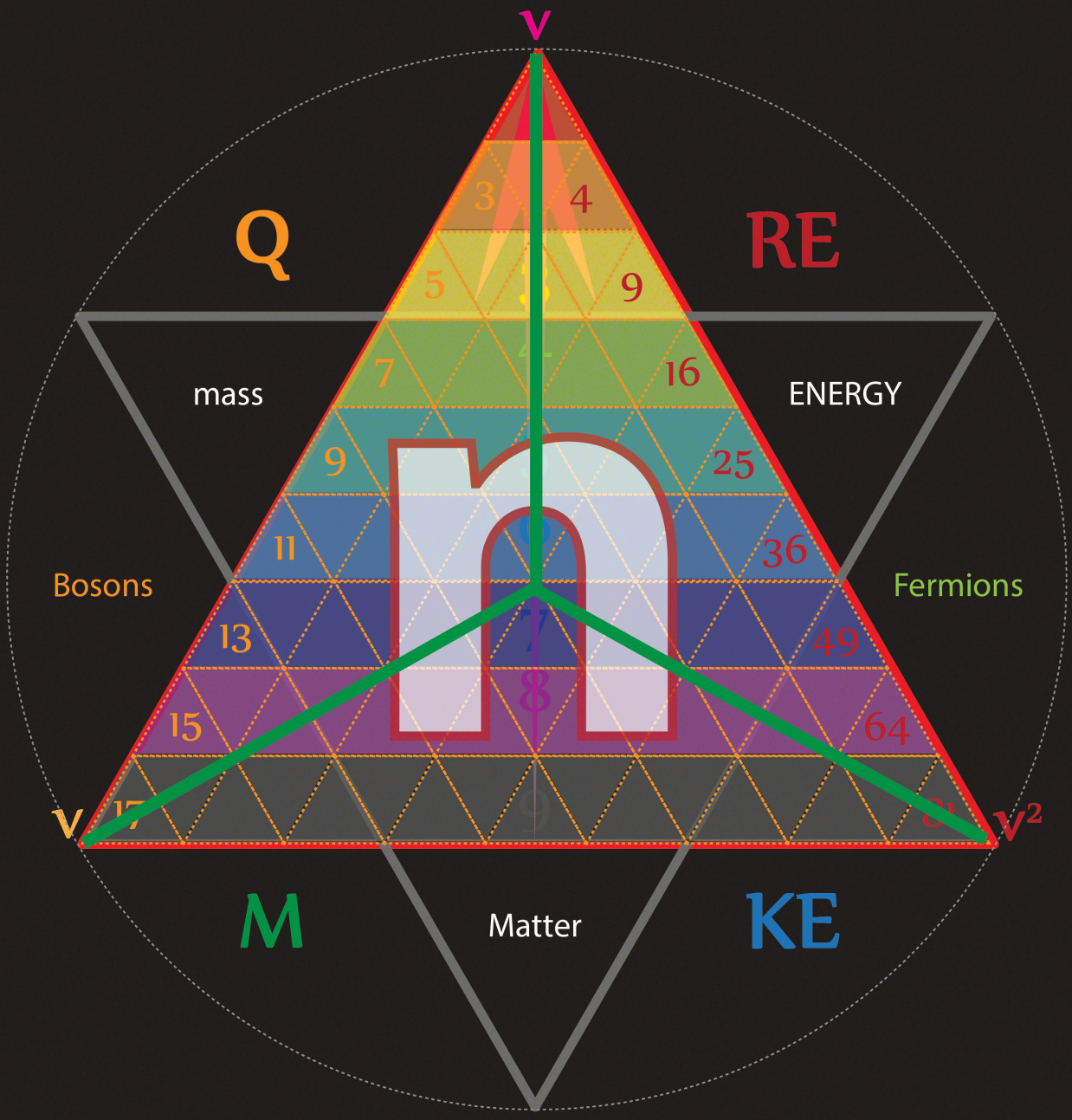
TETRYONICS

The Charged geometry of EM mass-Energy-Matter



FOUNDATION OF QUANTUM MECHANICS

Abraham

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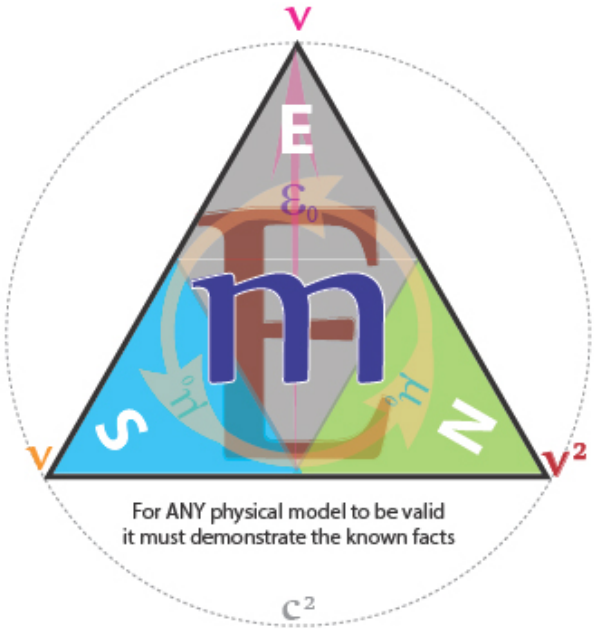
[TETRYONICS]

FUNDAMENTUM QUANTUM MECHANICA

Science is borne from Observation, and the Reasoning of known facts

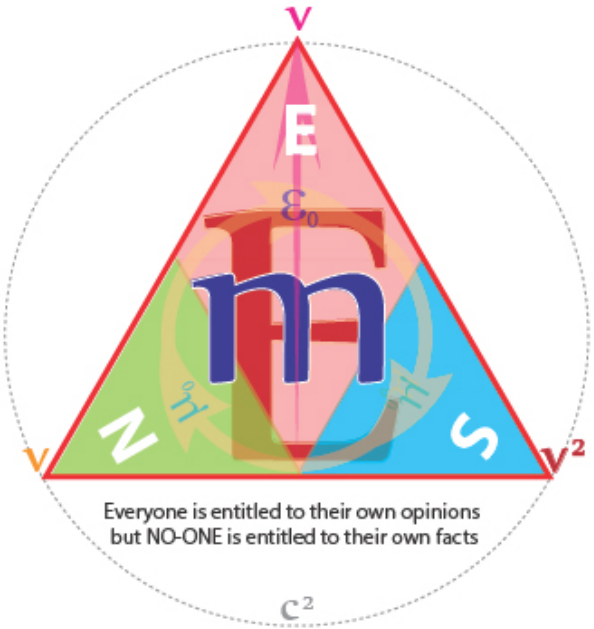
A Fundamental re-interpretation of the geometry of mass-ENERGY-Matter is required to complete 'The Standard model'

Geometry is the Canvas for all Physics, Mathematics is its language



"...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]



Facts and Reason
before
Letters and Numbers

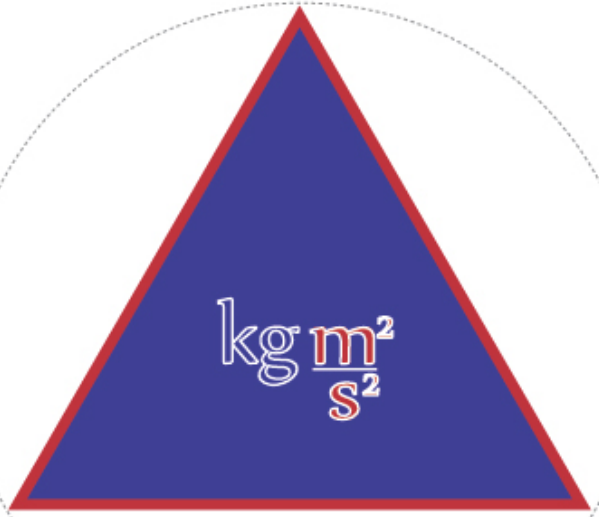
Having removed the impossible, anything that remains however improbable, must be the truth

In the following pages the true geometry of Quantum Mechanics is revealed, leading scientific endeavour to new realms of understanding

A hidden Topology is revealed

The a priori principle of Tetryonics is that Energy in all its forms has a foundational Equilateral geometry

mass-ENERGY-Matter

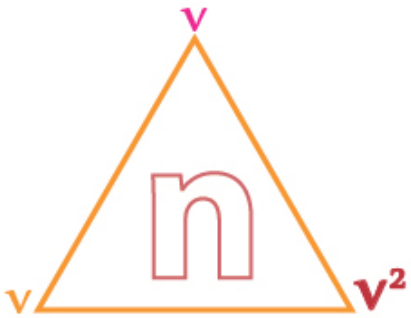


mass-ENERGY

c^2

mass-MATTER

c^2



The quantum mechanics of velocity, quanta, EM fields and mass-Energy-Matter will be fully revealed along with their geometries

ZPF

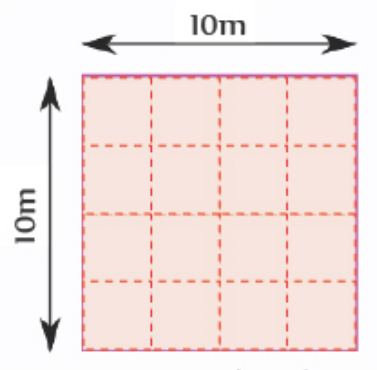
Equilateral triangles are the Foundational geometry for all mass-ENERGY-Matter properties, relationships and physical interactions

The Equilateral Quantised Angular Momentum intrinsic to mass-Energy geometries produces Charged geometries

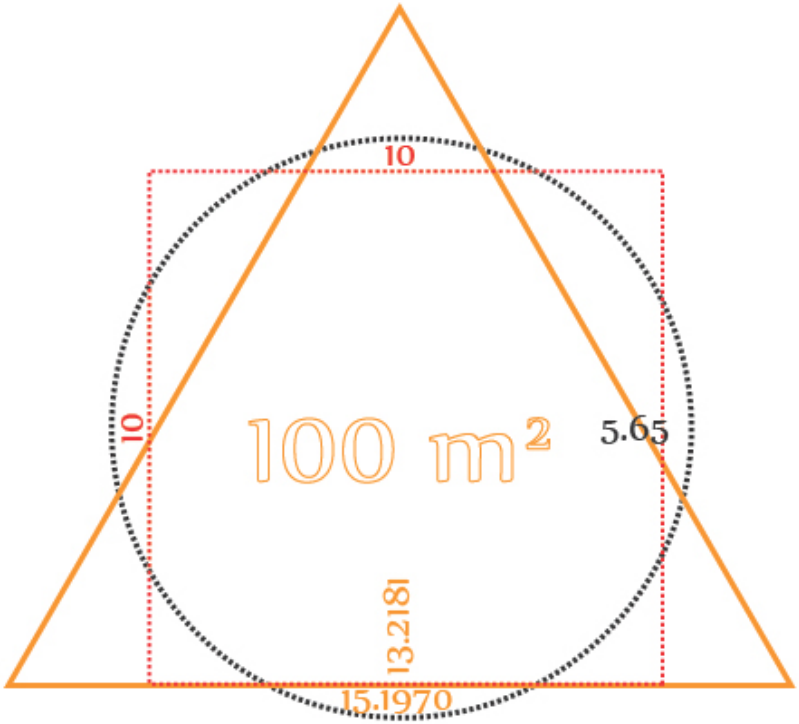
Square Areas

can be measured using a number of differing geometries

Square

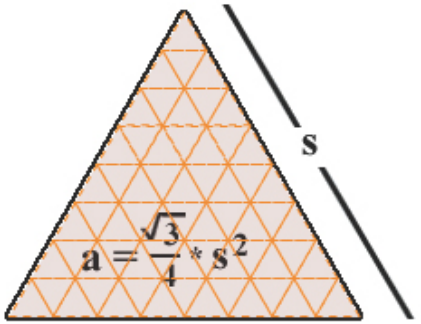


s= 10 = [100]



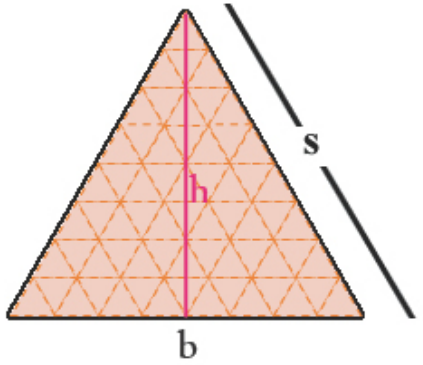
Triangular

s= 15.1970 = [100]



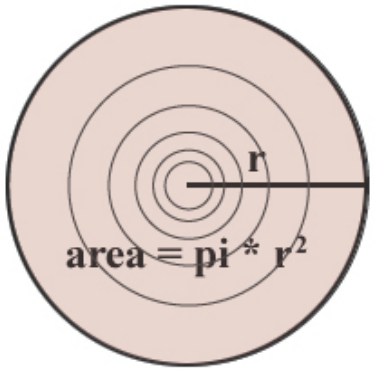
area = $(\frac{1}{2}*b)*h$

h = 13.2181



[.5x151.970]x13.2181
=100

Circular



r= 5.65 = [100]

In relation to mass-ENERGY-Matter

Square numbers are not SQUARE geometries

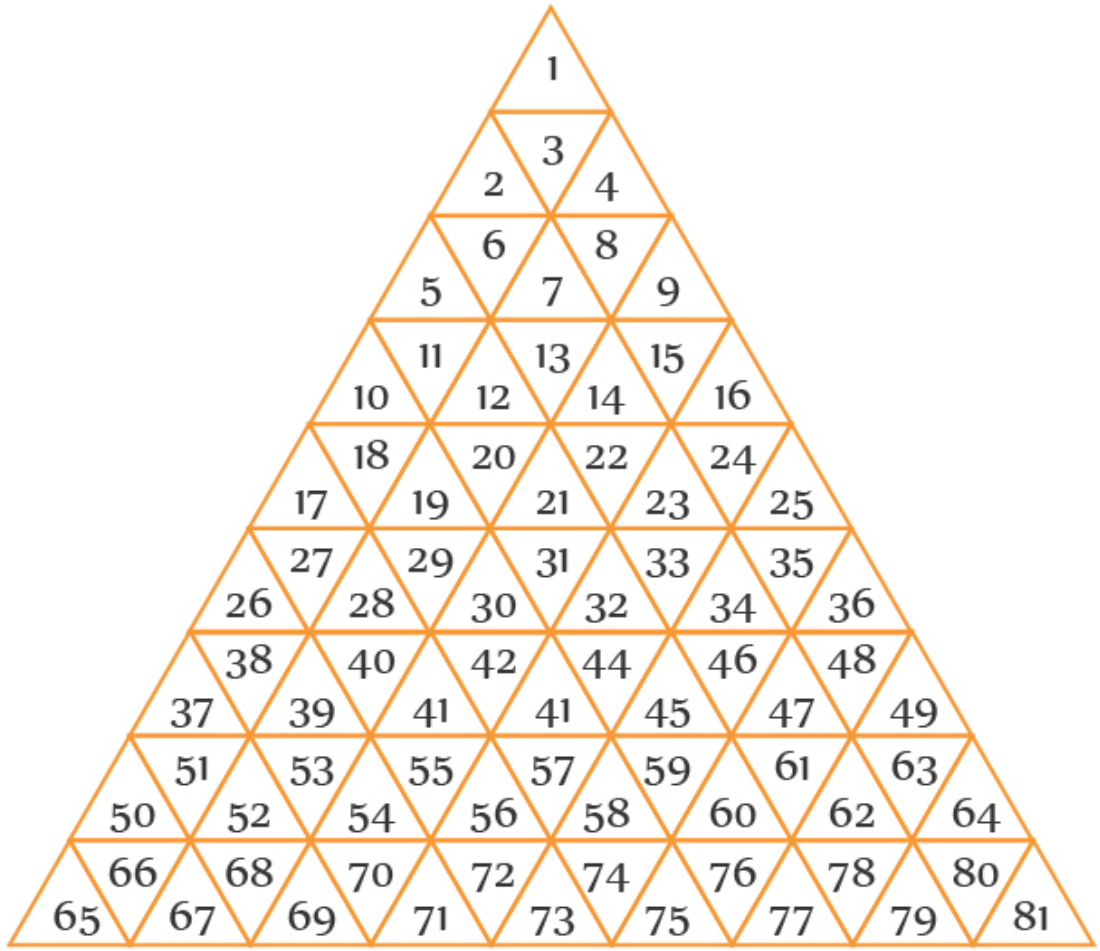
For a long time the assumption by scientists (and in particular Quantum Physicists) has been that circular geometries, [followed by Squares] are the primary geometry of Quantum Mechanical Physics

Tetryonics will prove that the Equilateral triangle is the universal Charge geometry of mass-Energy-Matter

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

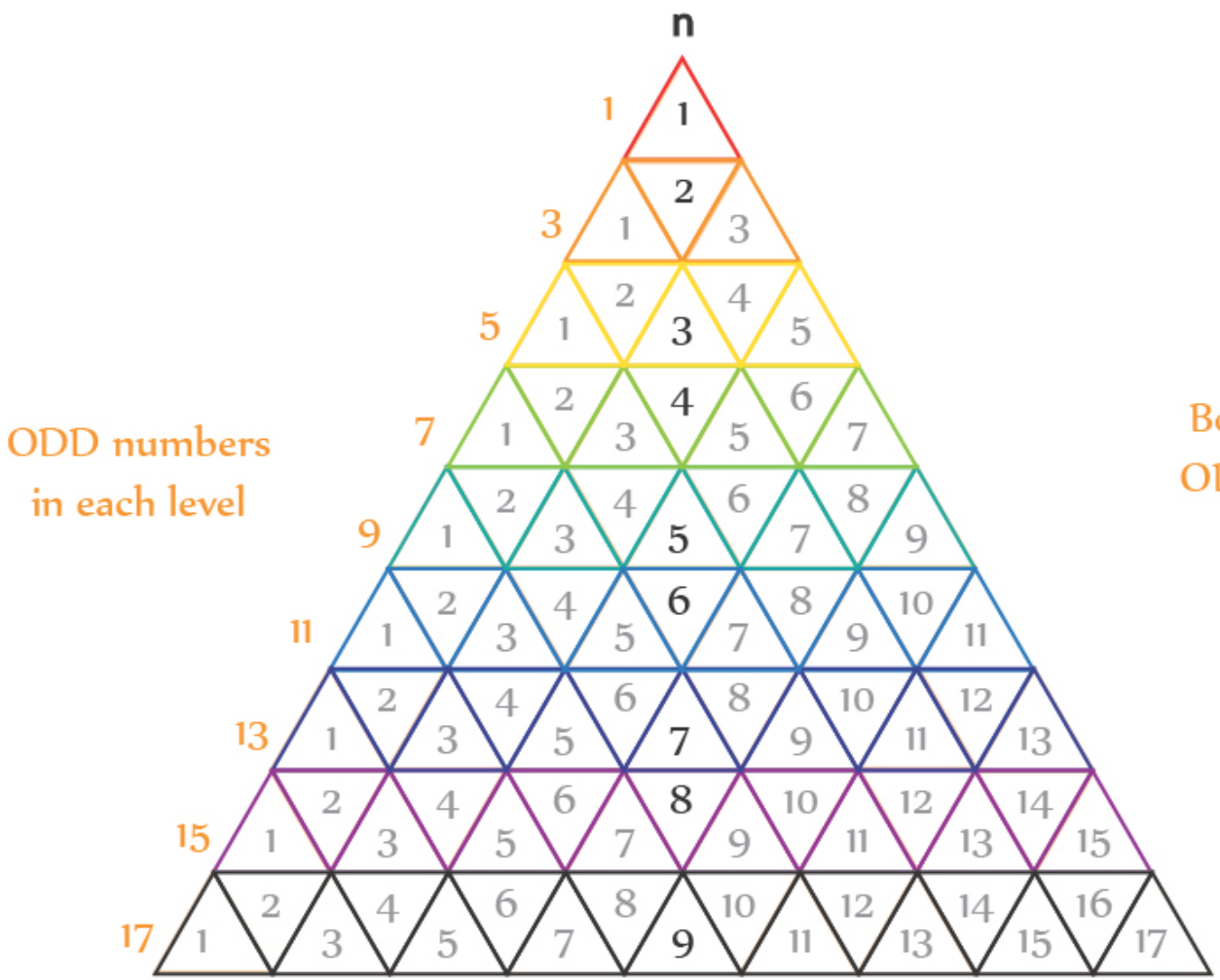


ODD numbers

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

If it is divided by two the result is a fraction.

One is the first odd positive number.



ODD numbers in each level

Bosons have ODD number quanta

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

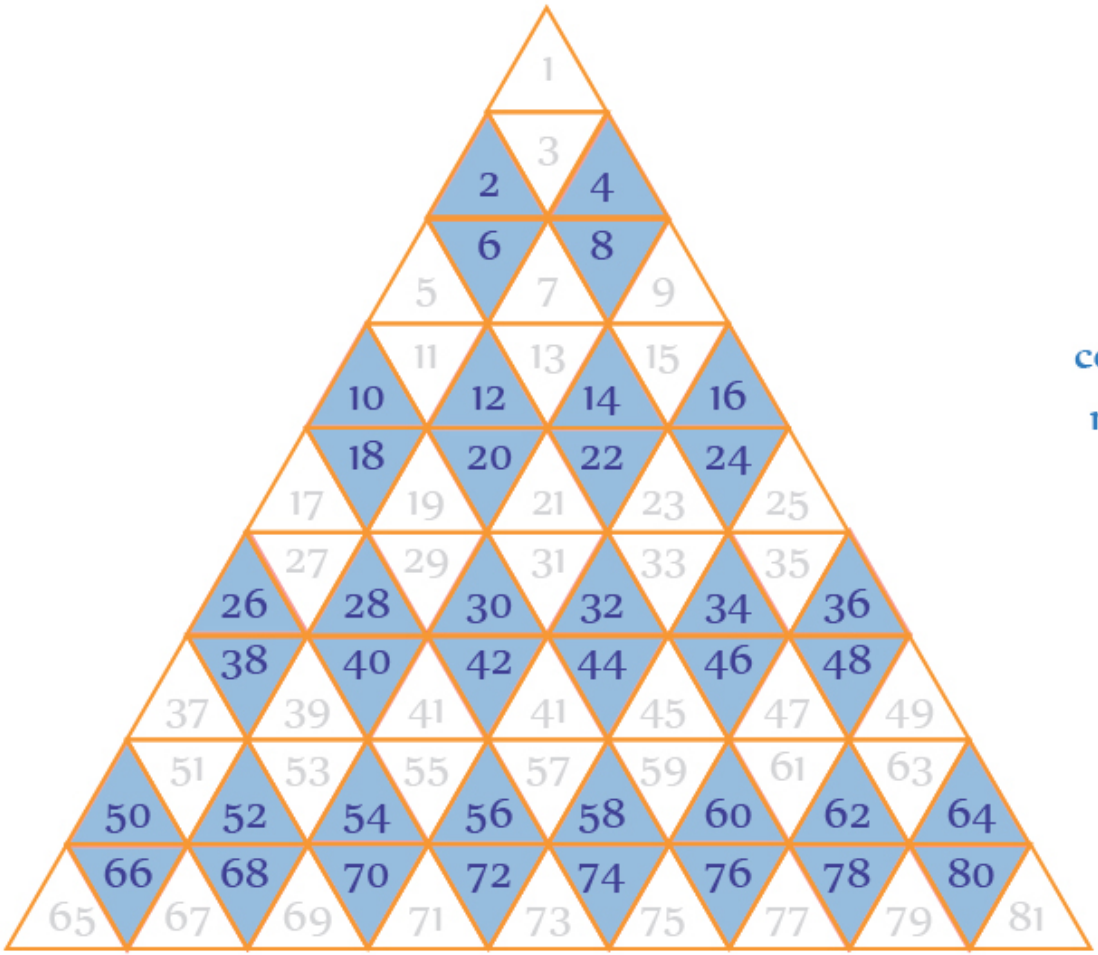
EVEN numbers

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

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.

Photons have EVEN number quanta

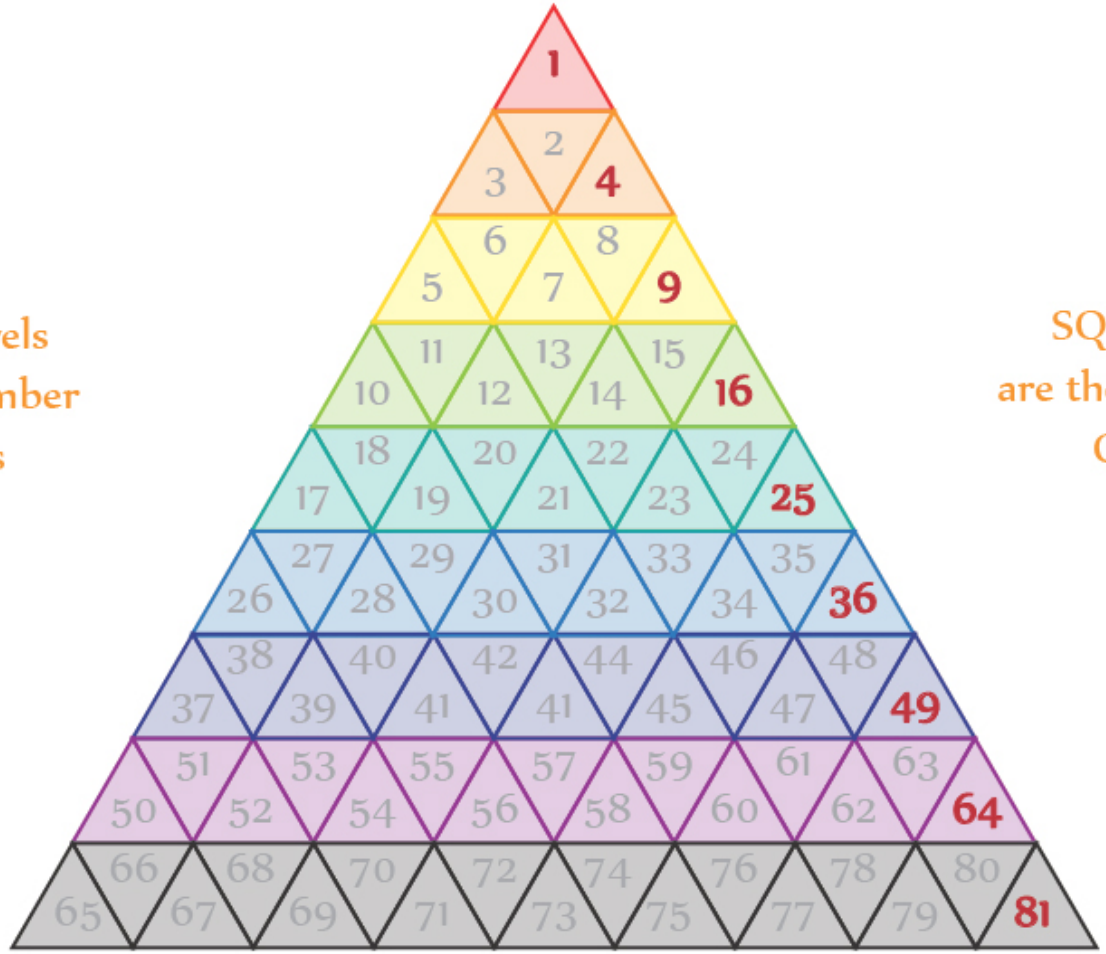


EM waves are comprised of EVEN numbered quanta

Square numbers

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

Quantum levels
have ODD number
geometries



SQUARE numbers
are the sum of successive
ODD numbers

Square
numbers

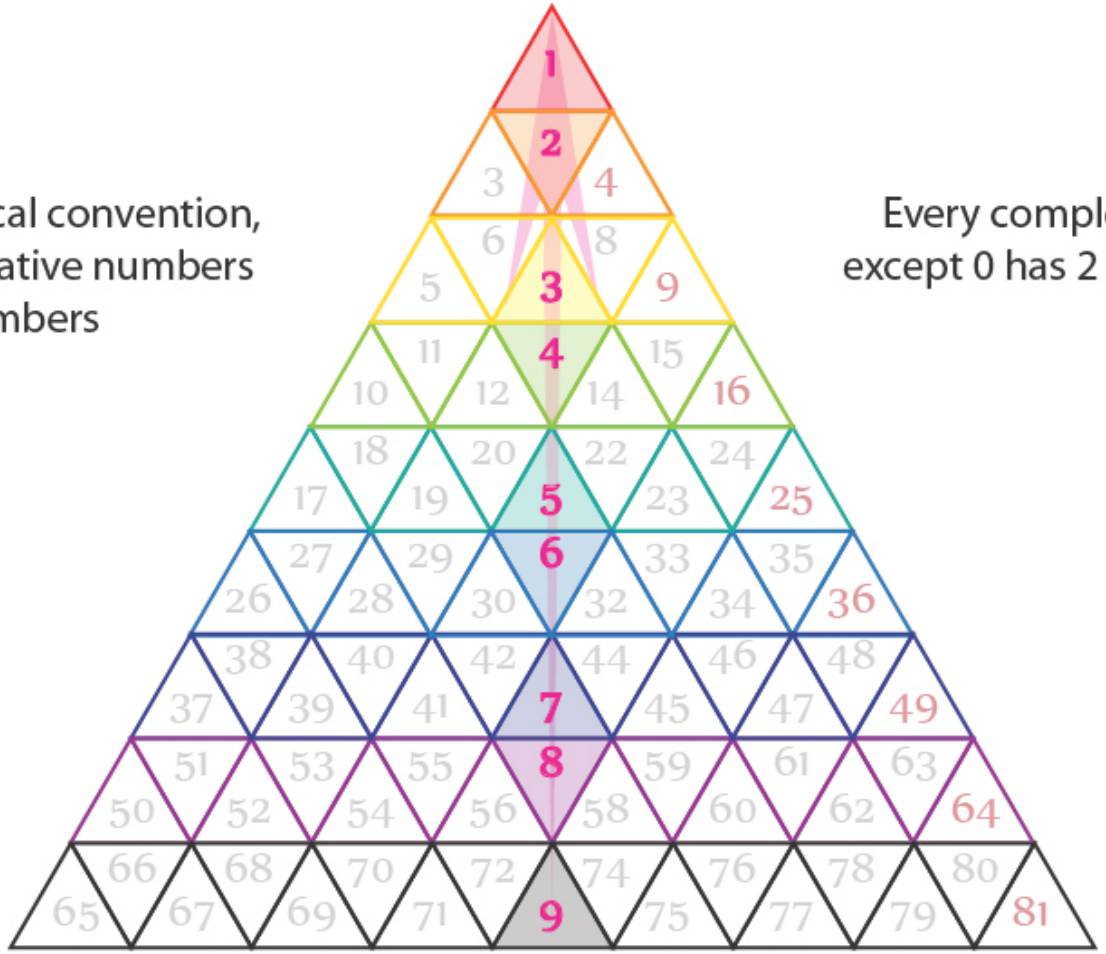
In Tetryonics Square numbers are NOT Square geometries

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

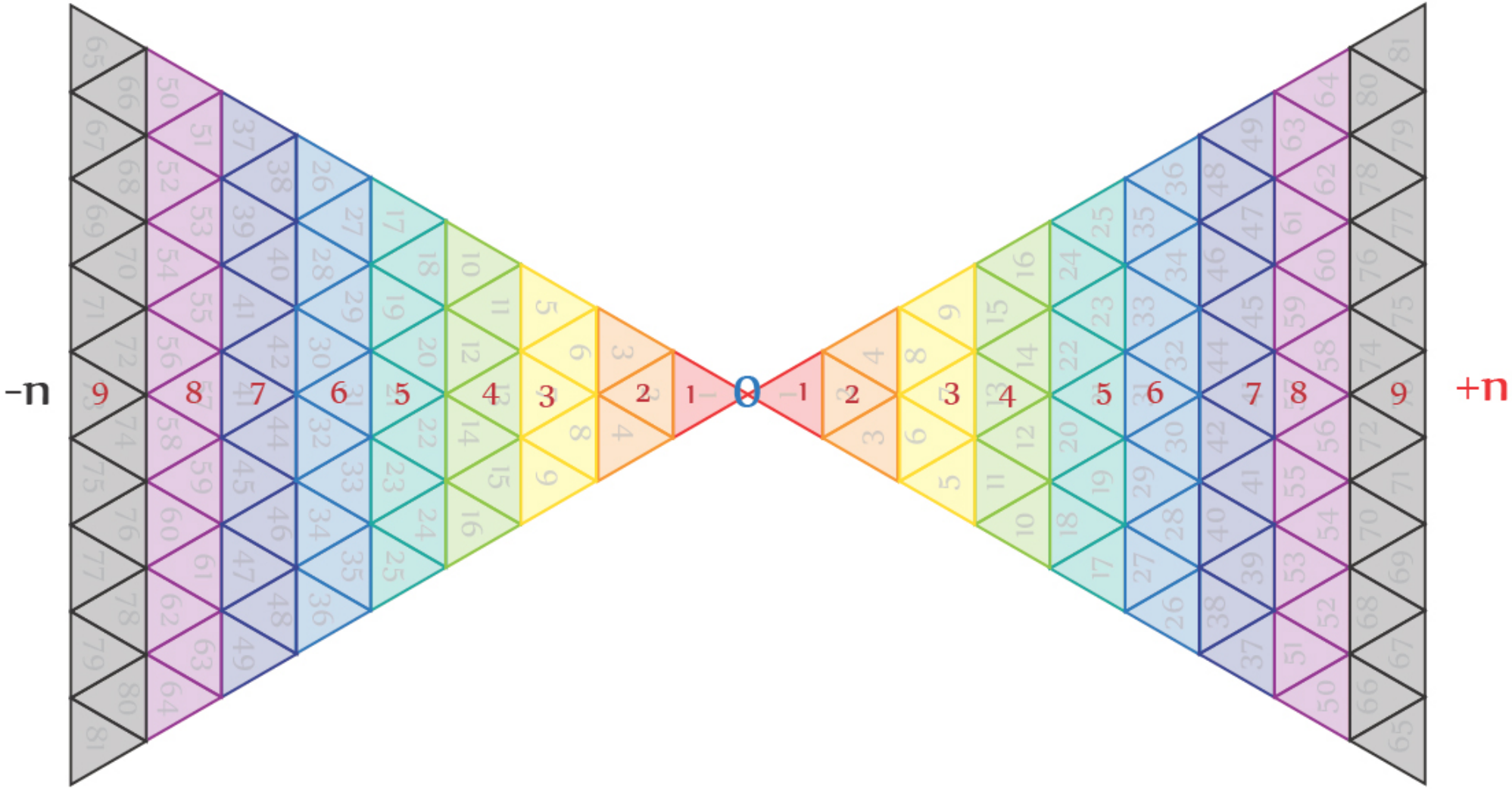


Every complex number except 0 has 2 square roots.

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

Real Numbers

In mathematics, a real number is a value that represents a quantity along a continuous line. The real numbers include all the rational numbers,

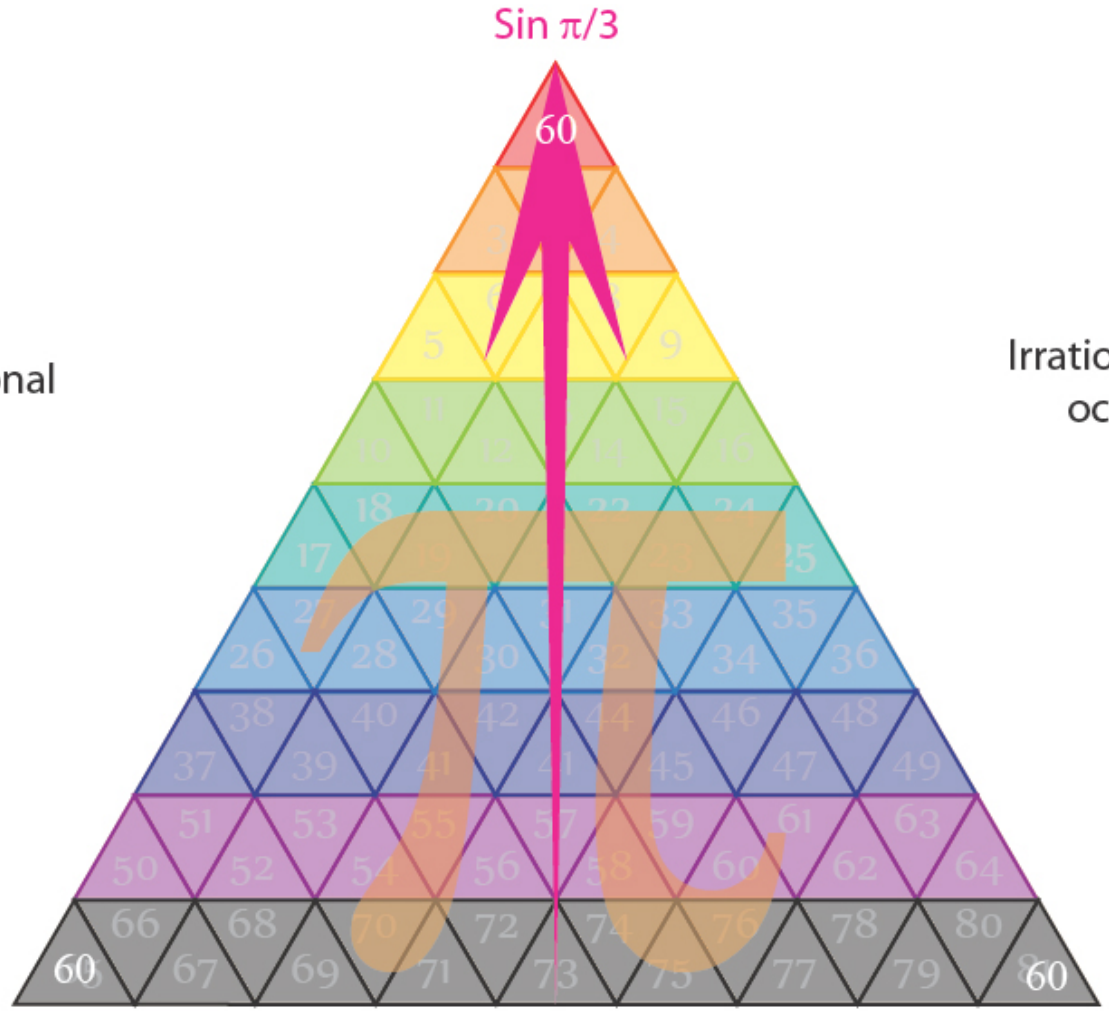


Irrational Numbers

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

One well known irrational number is π

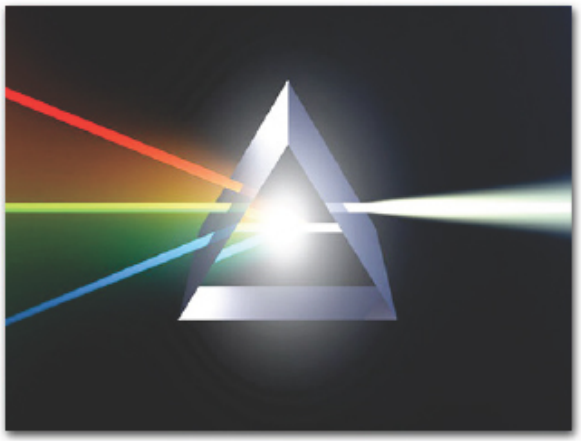
Irrational numbers often occur in geometry



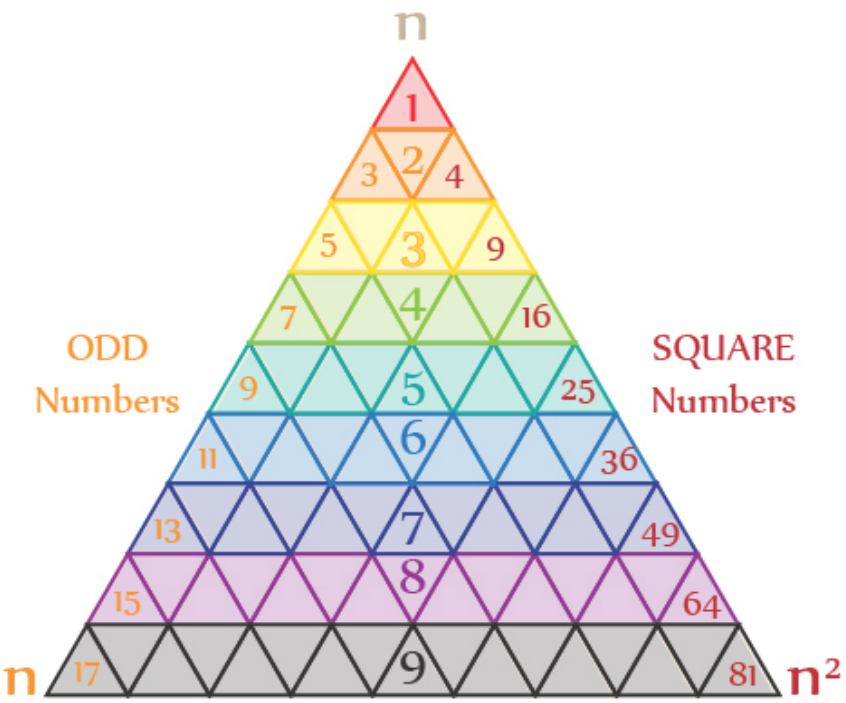
Tetryonic Colour Code

0	Grey
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 Energy levels of the numerous forms of mass-Energy-Matter and it illustrate relationships between various Physical properties.



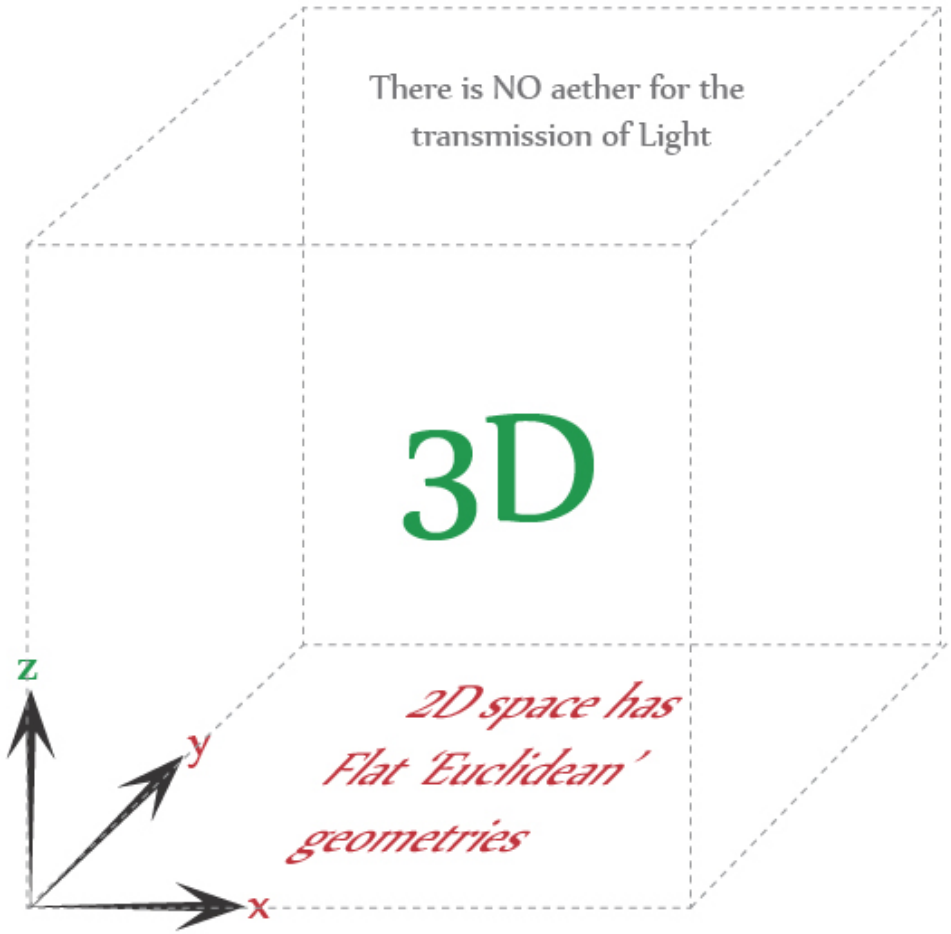
Tetryonics uses a colour code that is based on the spectral colours of dispersed White Light



Free Space

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

Space has no dimensions other than what is assigned to it for purposes of its measurement



Energy moves through Space in various forms: Photons, Matter etc

Space can be Cubic Spherical or Tetrahedral etc.

Empty Space is defined as a geometric volume devoid of Energy

Radial Time

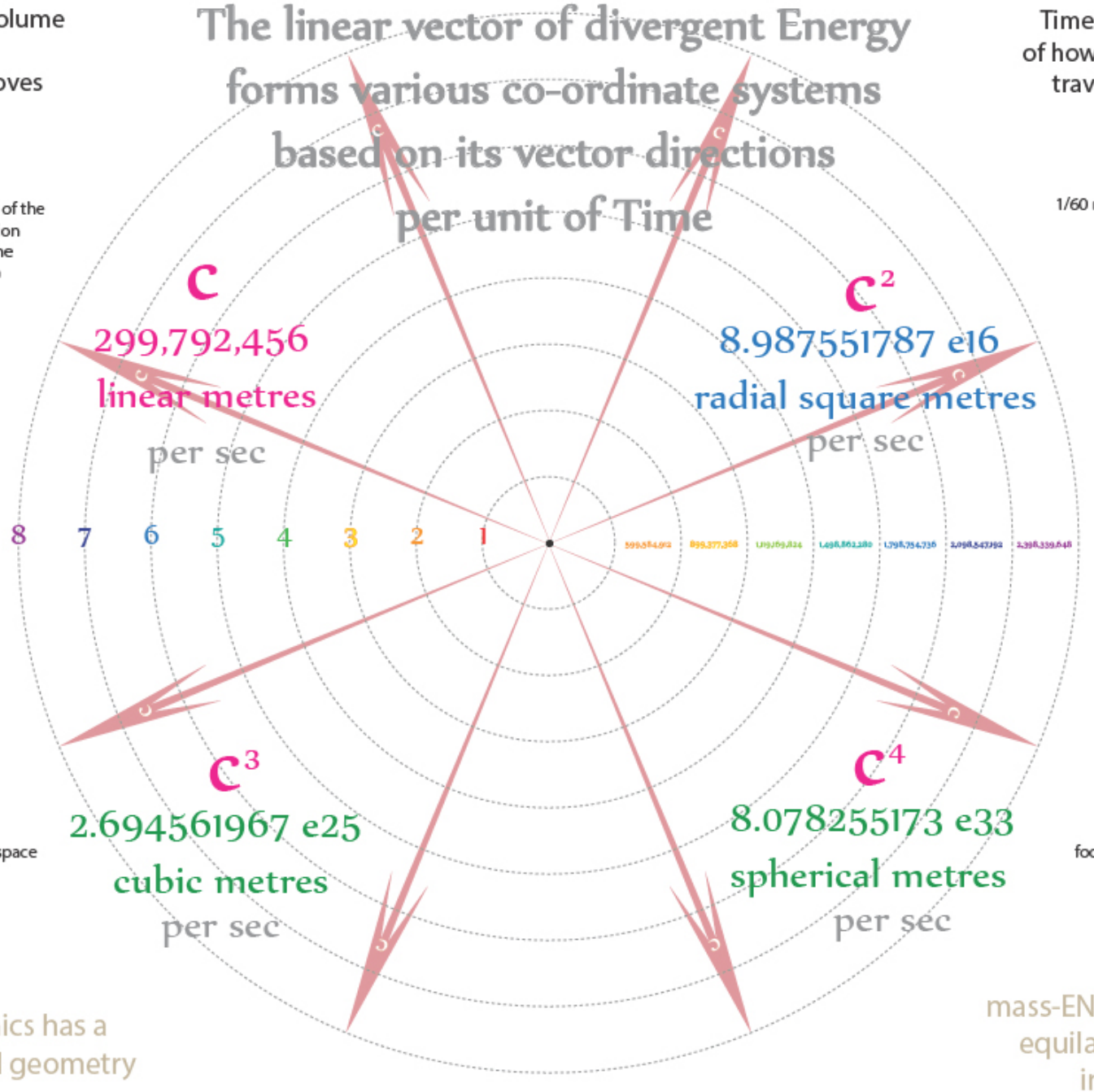
Free Space is the spatial volume in which charged mass-Energy-Matter moves

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

Time in Physics is a measure of how long it takes for light to travel 299,792,456 metres

The duration of 9,192,631,770 periods of the radiation corresponding to the transition between the two hyperfine levels of the ground state of the caesium-133 atom

1/60 minute (excluding leap seconds)
1/31,557,600 Julian year
1/86,400 day
1/3,600 hour



1 metre is
the distance Light travels
in 1 sec when propagating in free space

The second is also the base unit of time in the centimetre-gram-second, metre-kilogram-second, metre-tonne-second, and foot-pound-second systems of units.

Energy in Tetryonics has a Equilateral physical geometry

mass-ENERGY-Matter are all equilateral geometries in radial time

Spatial geometries

Any geometry based on the speed of Light forms distinct geometries

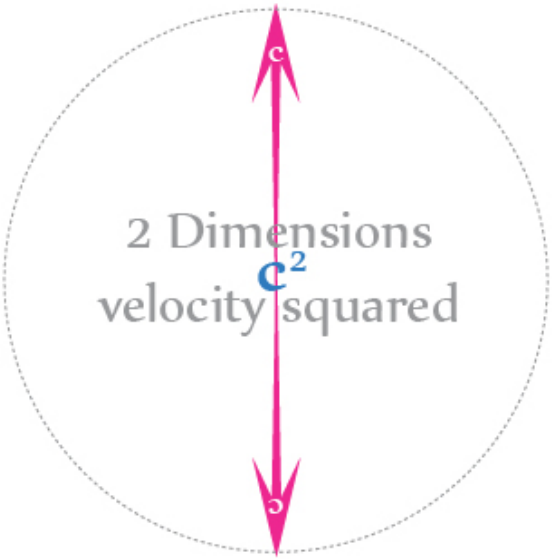
Known since Greek times as The Platonic Solids

vector lines

1 Dimensional velocity

metres

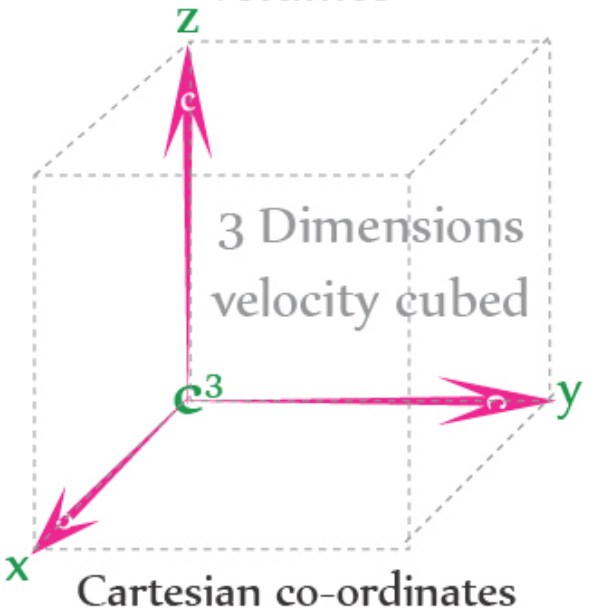
Planar Circles



2 Dimensions velocity squared c^2

seconds

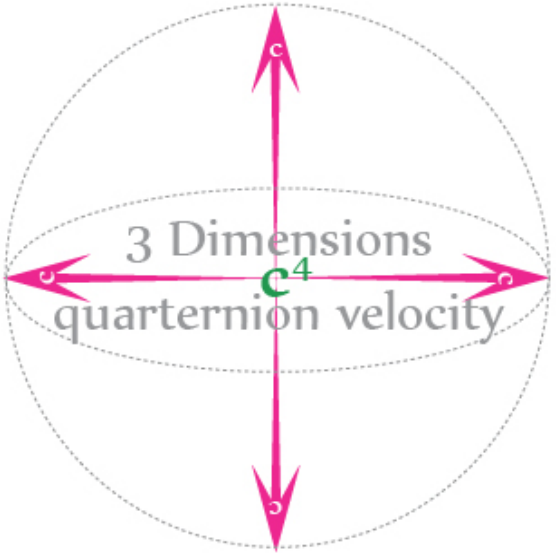
Cubic volumes



3 Dimensions velocity cubed c^3

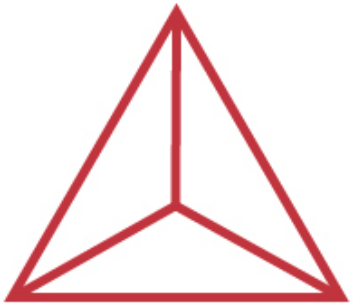
Cartesian co-ordinates

Spherical volumes



3 Dimensions quarternion velocity c^4

seconds^2

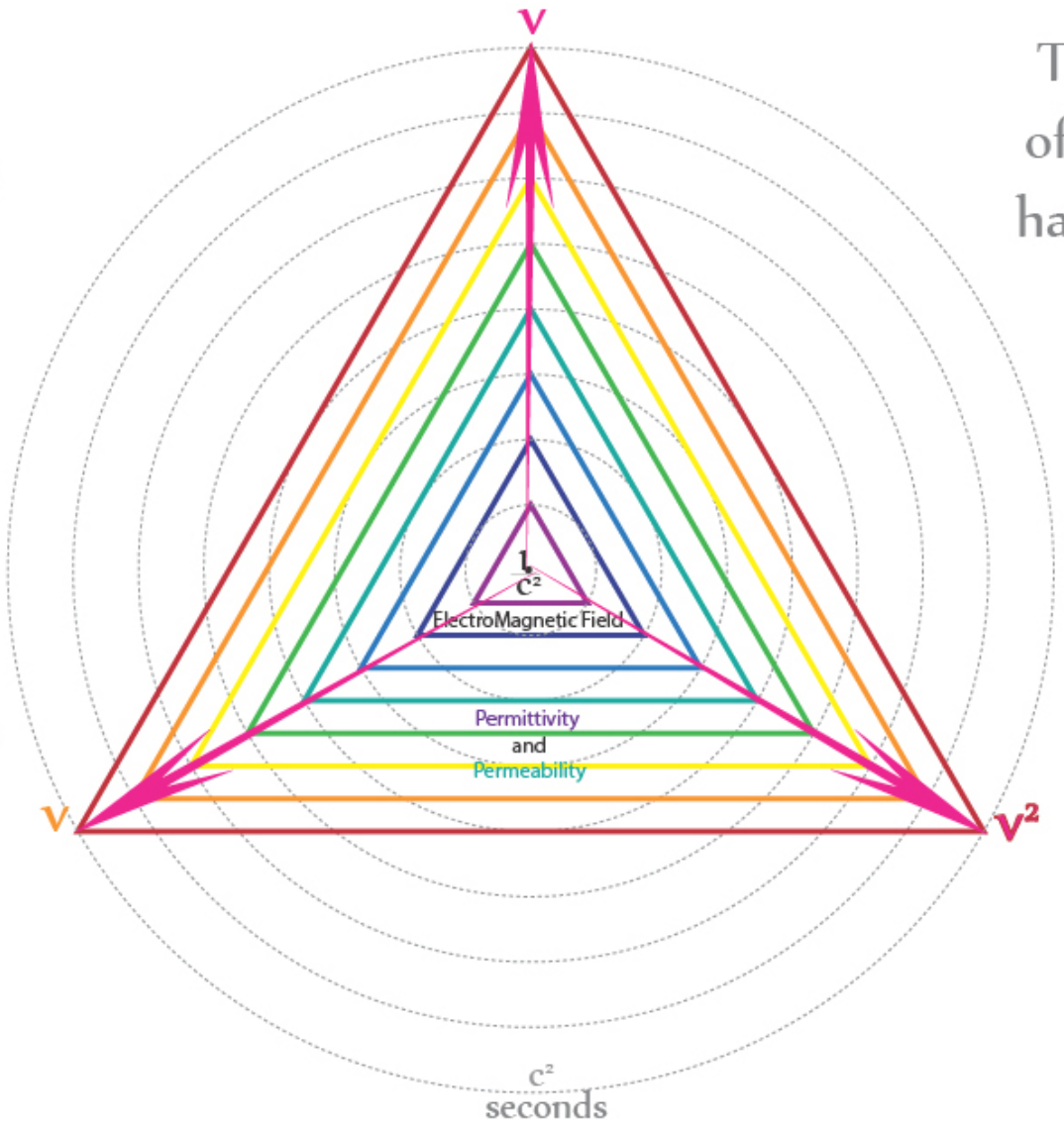


Energy has an equilateral geometry and forms Tetrahedral volumes within Empty Space

The Spatial geometry of Energy

Energy has a 2D Equilateral Euclidian geometry

Time - as a measure of divergent Energies has a Radial geometry



Equilateral geometry is the inverse of spherical geometry

3D Matter has a Tetrahedral Platonic geometry

c is the natural speed of Energy

Velocity

In physics, 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 scalar absolute 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

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

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

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

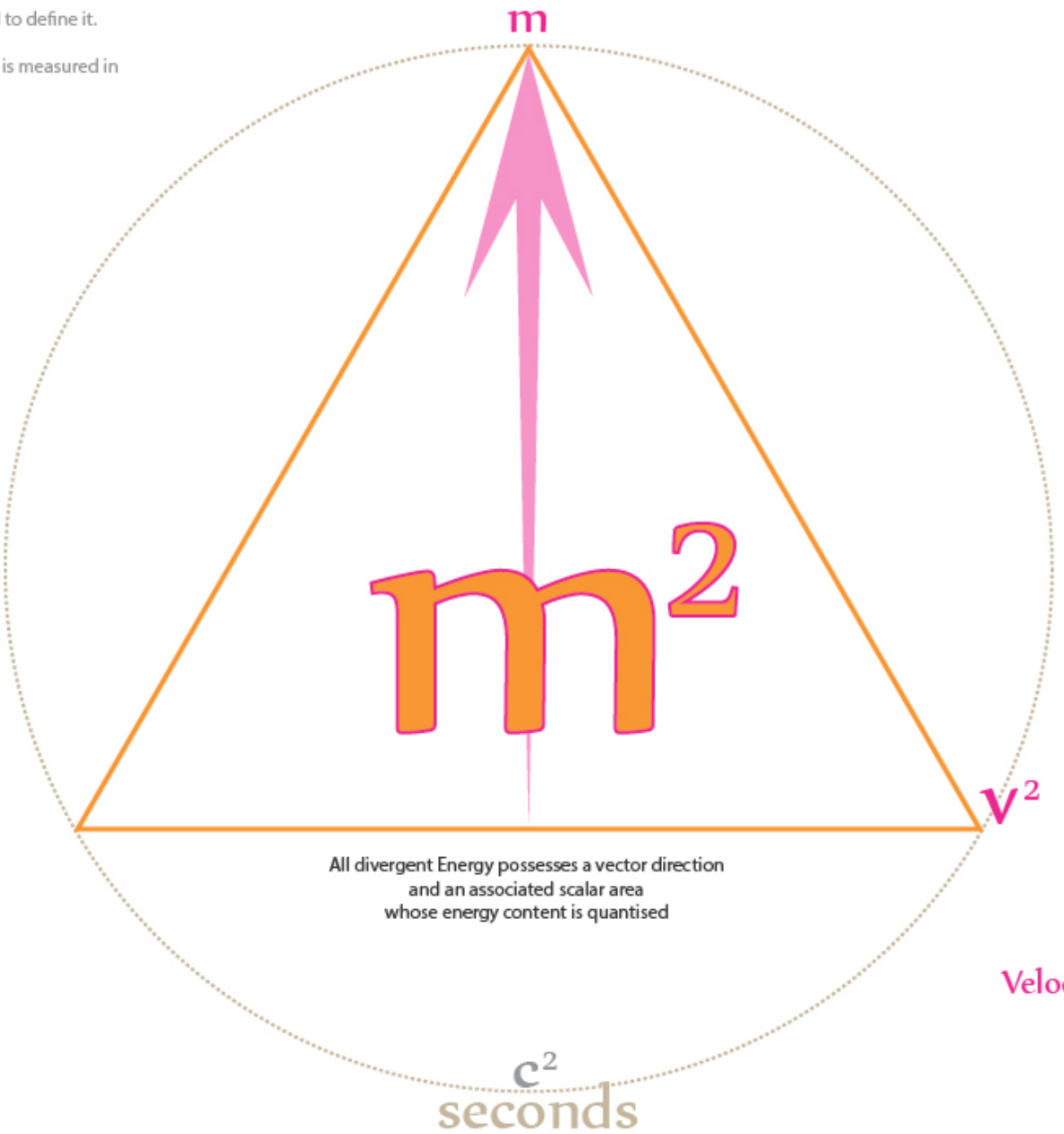
Velocity squared is the scalar value of the
Distance traveled per unit of Time squared
(Energy volume)

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

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

sec

is a 2D
PLANAR TIME
MEASUREMENT



All divergent Energy possesses a vector direction
and an associated scalar area
whose energy content is quantised

Velocity squared

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

sec^2

is a 3D
SPHERICAL TIME
MEASUREMENT

Acceleration

In physics, acceleration is the rate of change of velocity 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)

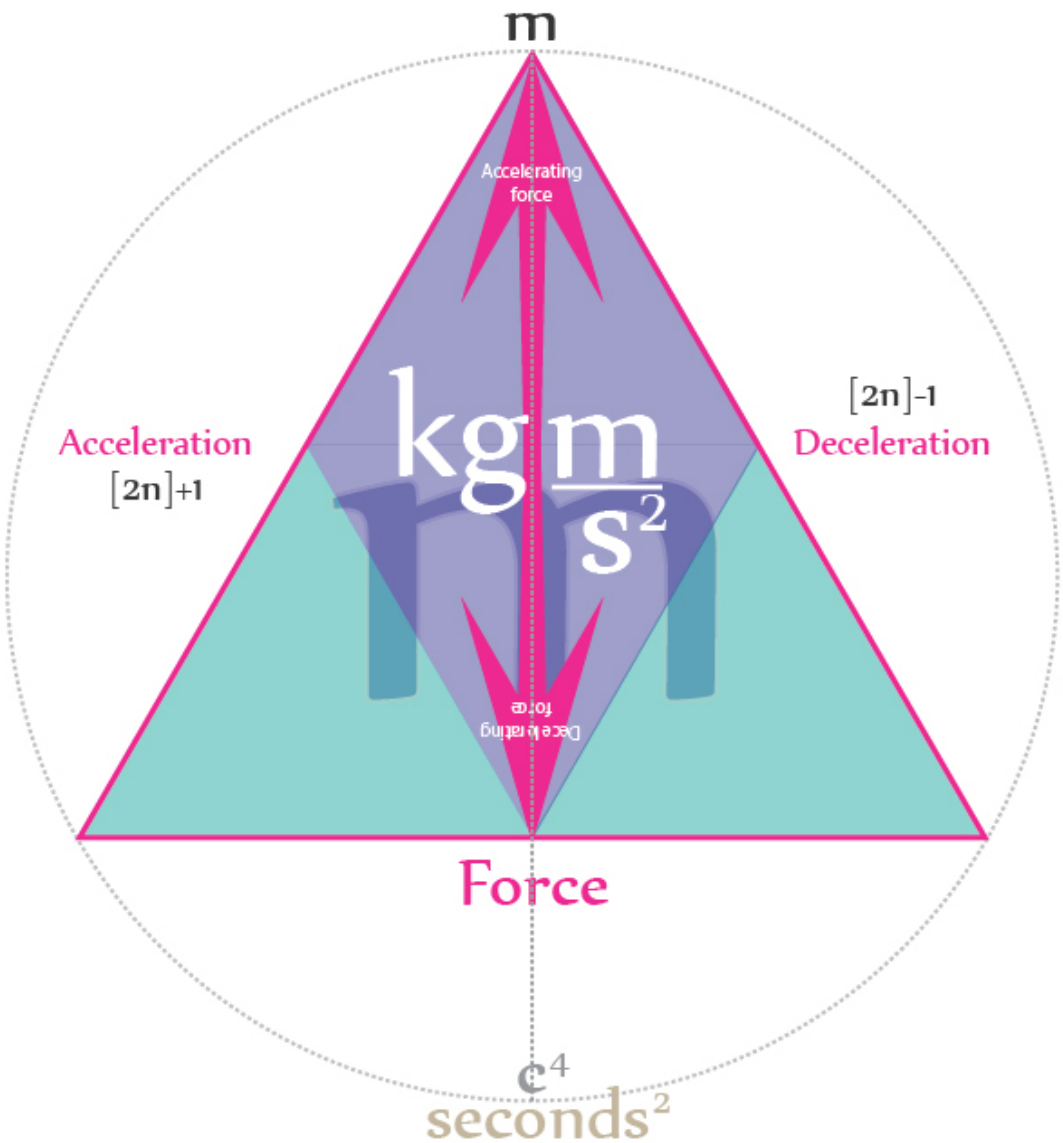
$F=ma \longrightarrow a=F/m$

Force

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

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)

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



Quantised Angular momentum

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

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

mA

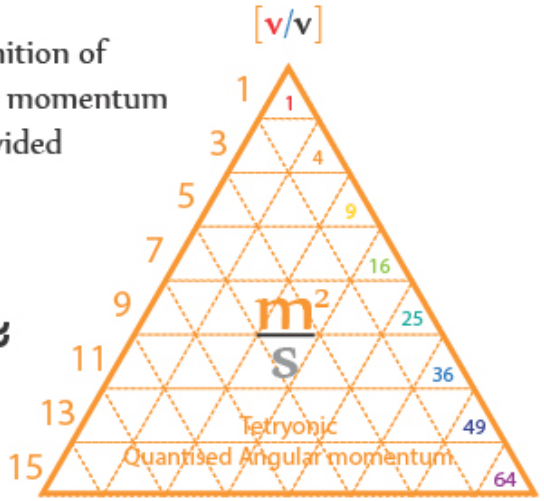
mass x qAm

Planck's Constant

Normally viewed as an expression of rotational momentum Quantised Angular Momentum [qAm] is in fact a result of the nett equilateral geometric quantisation of mass-Energy

A major redefinition of Quantised Angular momentum is now provided

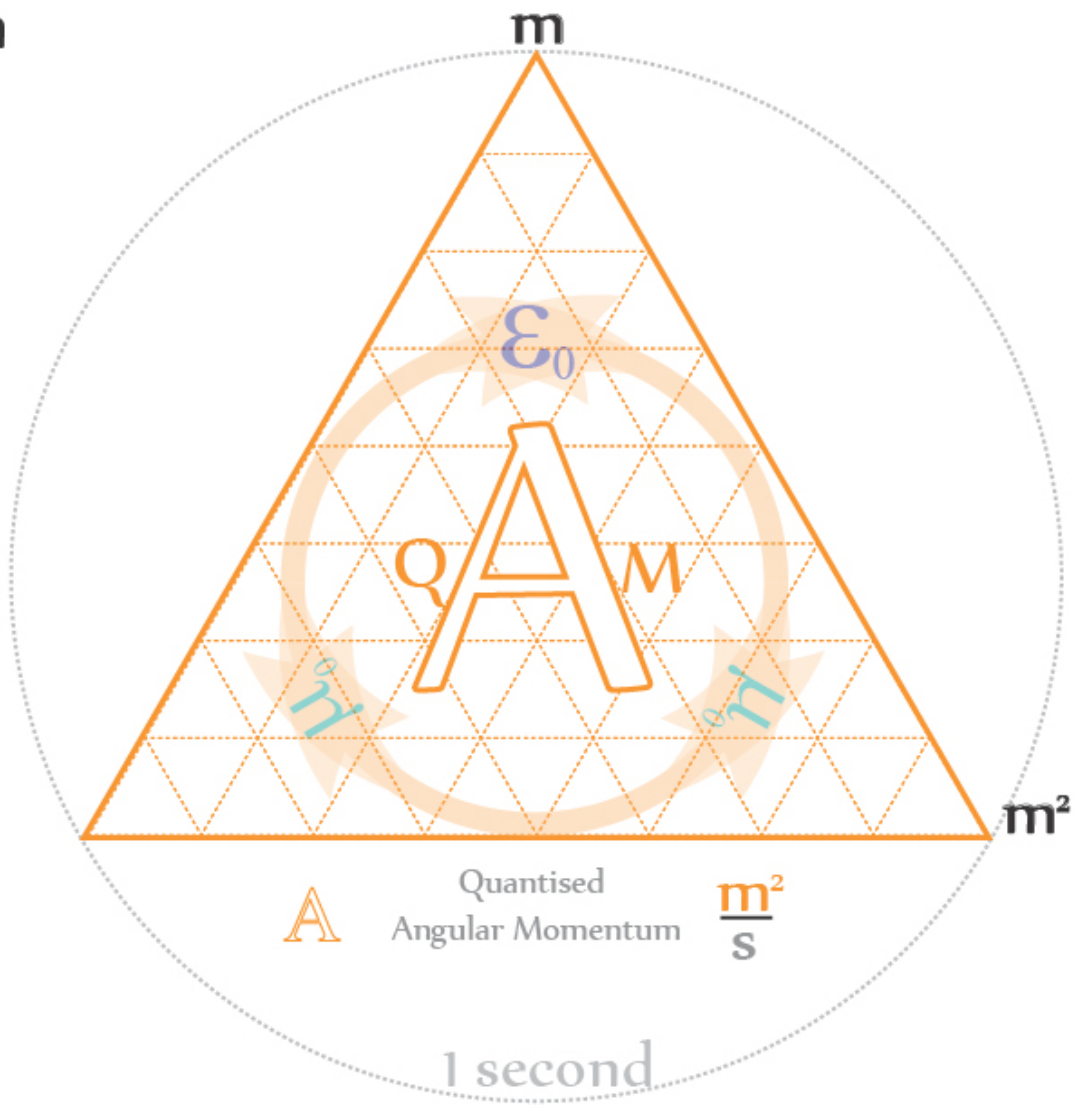
≈



classical rotational angular momentum

Tetryonic quantum mechanics

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



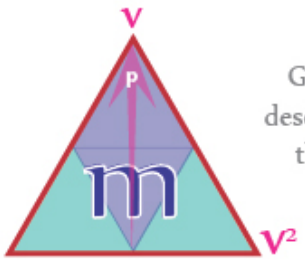
Conservation of Angular momentum

Angular momentum is sometimes described as the rotational analog of linear momentum, in Tetryonics it is best described as the Energy area bounded by velocity squared geometry [or as the square of linear momentum]

Quantised Angular momentum is conserved in a system where there is no net external Forces and its conservation helps explain many diverse physical phenomena.

mass - Energy geometry

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



Gottfried Leibnitz first described Scalar Energy as the square of velocity

$$E = mv^2$$

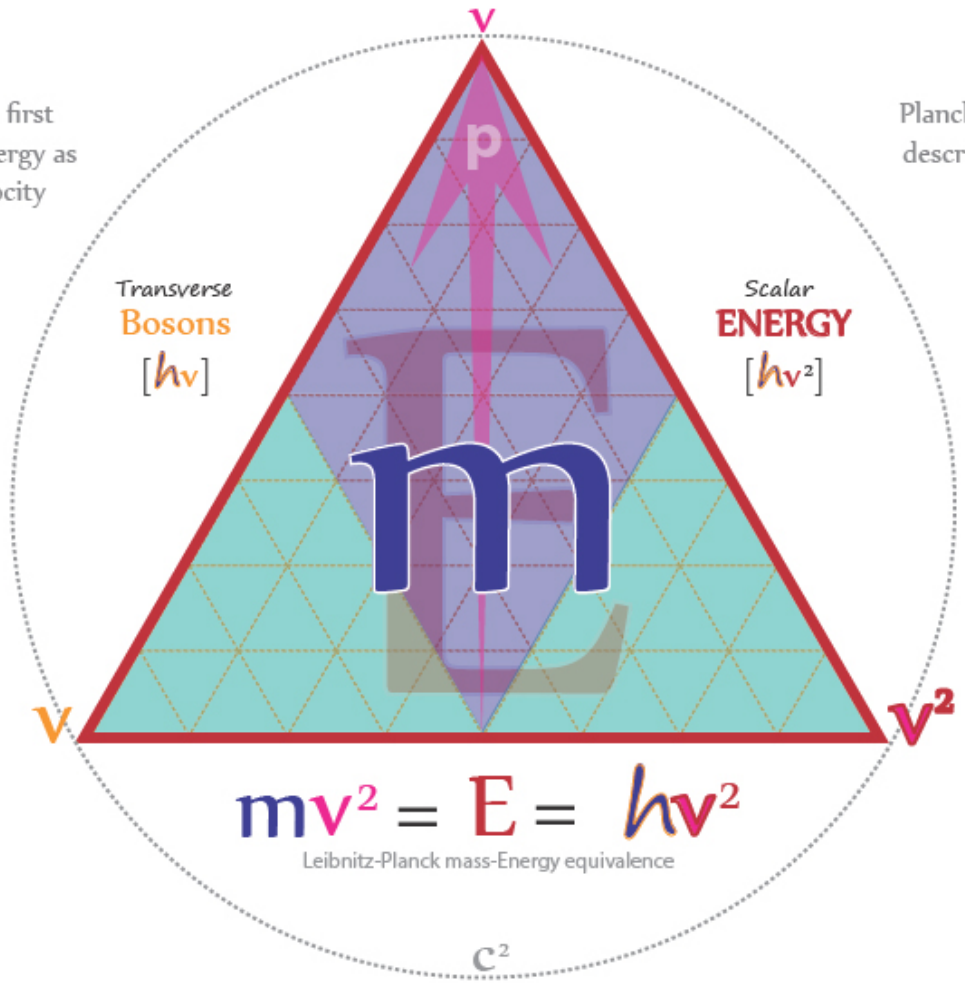
Leibnitz mass-energy equivalence

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

scalar
EM mass

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

mv^2



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

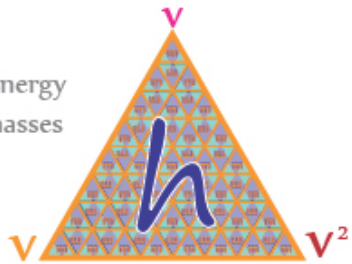
Leibnitz-Planck mass-Energy equivalence

All free EM mass-Energy waveforms propagate at the Speed of Light

$$v = c$$

Leibnitz EM mass-Energy equivalence

Planck developed his Heat Law using quantised mass
h=mA
(Planck Constant)



Planck's equation for Energy describes transverse masses [Bosons]

$$E = nhv$$

Planck mass-energy equivalence

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

Quantised
mass

Planck quanta per second

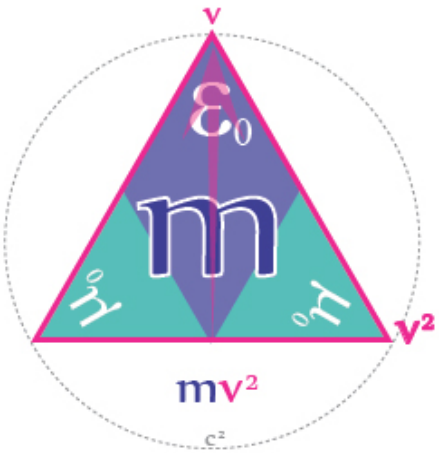
$$\left[kg\,\frac{m^2}{s}\,\frac{1}{s}\right]\frac{s^2}{m^2}$$

Tetryonic EM mass-Energy equivalence

mAv^2

mass-Energy Forms

Scalar/Linear forms



mass x velocity squared

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

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

The Energy of a system can be viewed as a product of its mass x velocity squared or equally as momentum squared. In the case of Matter its intrinsic mass-Energy always propagates at the speed of light

Energy-momentum

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

$$m[A]v^2$$

Energy is subject to the law of conservation

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

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

mass is a scalar measurement of Energy per unit of Time

Quantised form

Planck's Constant quanta per second

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

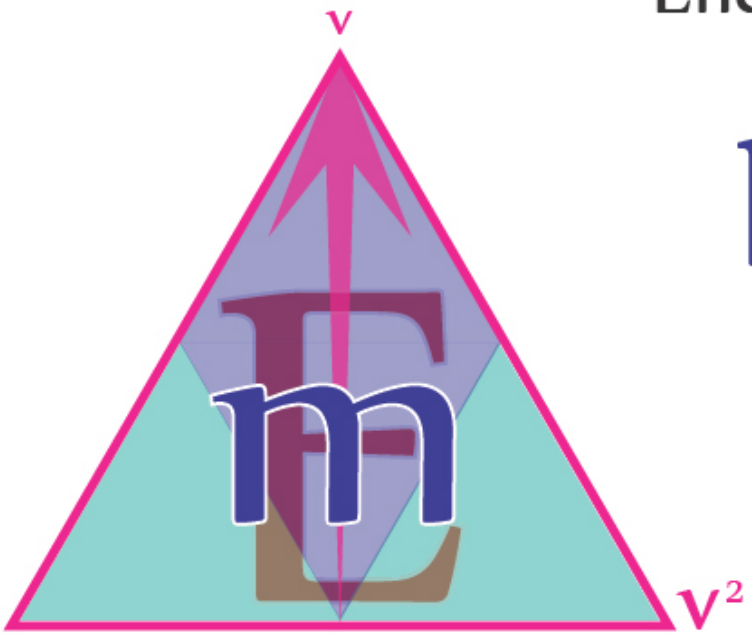
$$W = F.d = ma.d$$

Since work is defined as a force acting through a distance (a length of space), energy is always equivalent to the ability to exert pulls or pushes against the basic forces of nature, along a path of a certain length

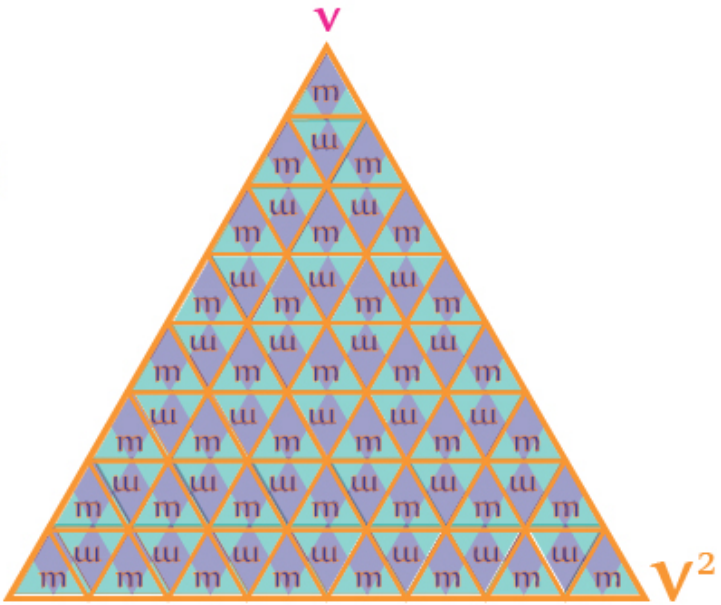
Quantised mass-Energy

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

Energy quanta

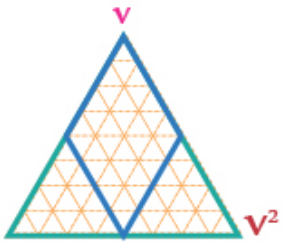


$$kg\,\frac{m^2}{s^2}$$



Energy is mass-Velocity squared

$$E = mv^2$$



$$[mAv^2]$$

Energy is Planck-quanta squared

$$E = hv^2$$

scalar mass

$$kg$$

quantised mass

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

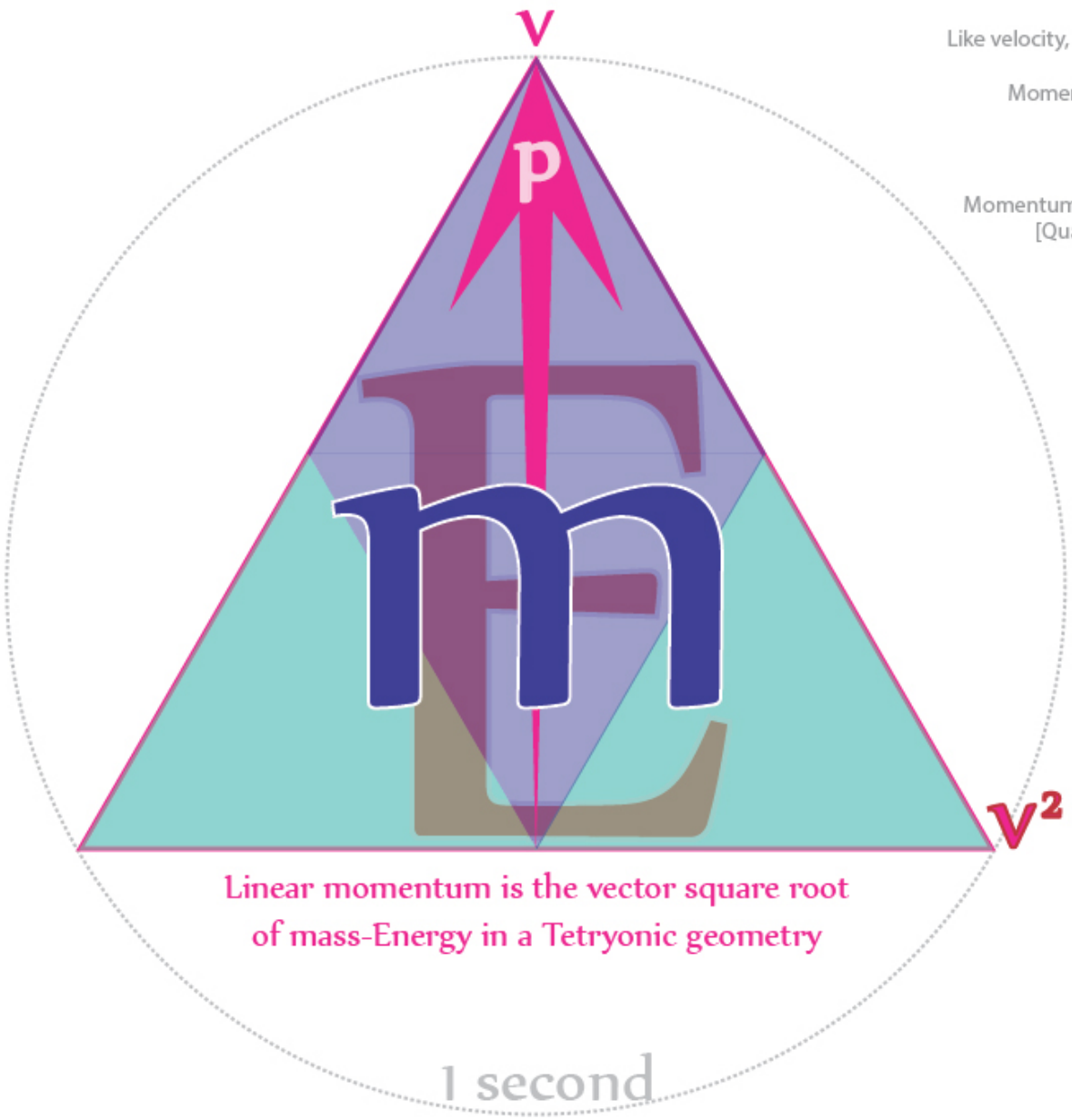
$$m = \frac{E}{v^2}$$

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

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)

Momentum

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



Linear momentum is the vector square root
of mass-Energy in a Tetryonic geometry

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.

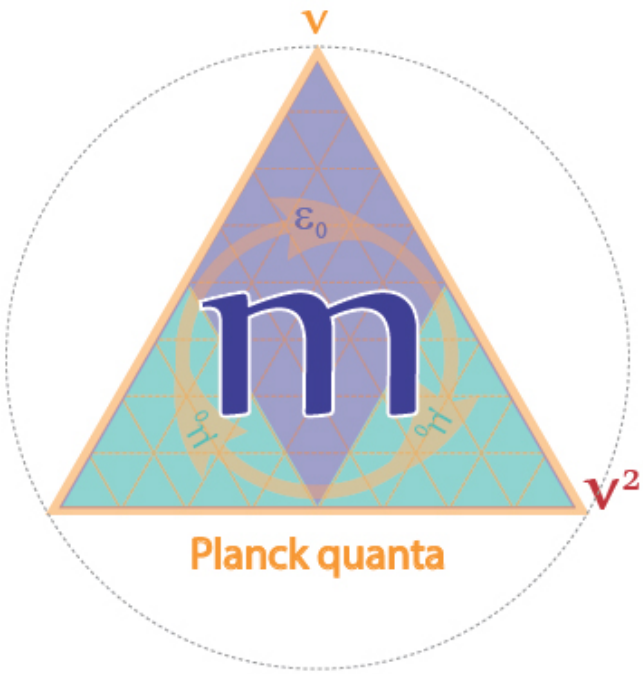
$$p^2 = E = mv^2$$

Energy can be expressed as
the square of linear momentum

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

mAv^2

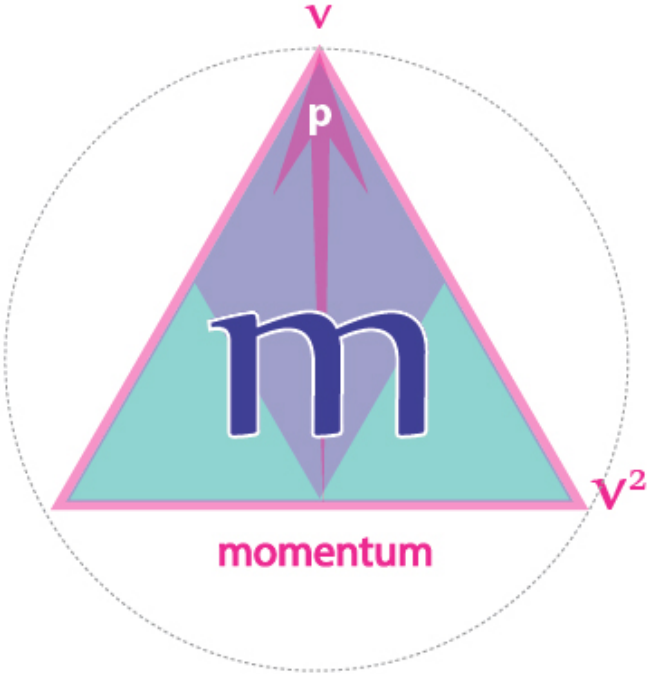
Velocity-Quanta equivalence



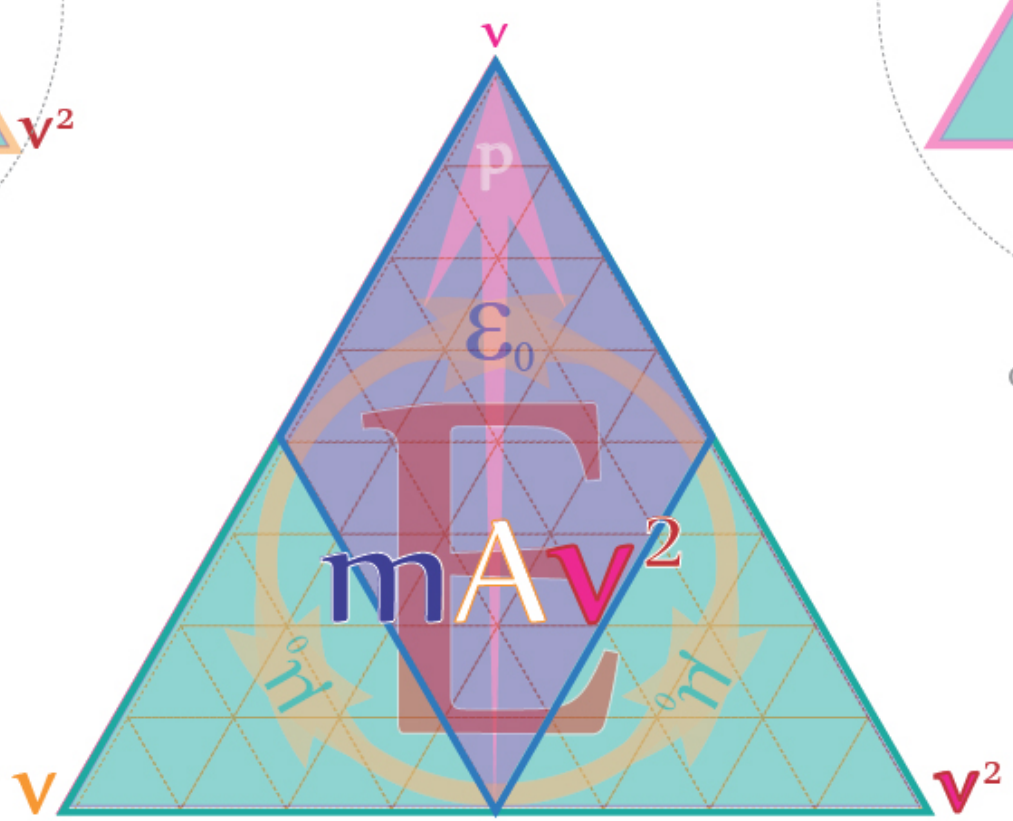
Planck quanta

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

but most recently Quantum mechanics was developed utilising the Planck quantum - Energy relationship



momentum



quantum scalar force

hv^2

mass
angular momenta
per second

$kg\ \frac{m^2}{s}\ \frac{1}{s}$

classical vector force

mv^2

mass
linear velocity
squared

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

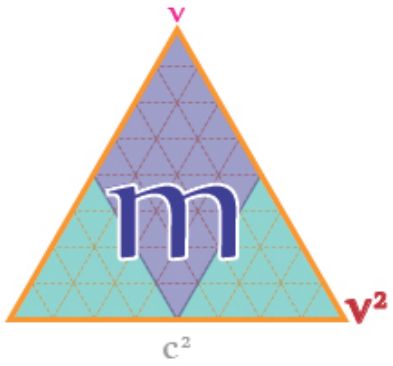
The EM mass-Energy relationship can be revealed either by linear or angular momentum analysis

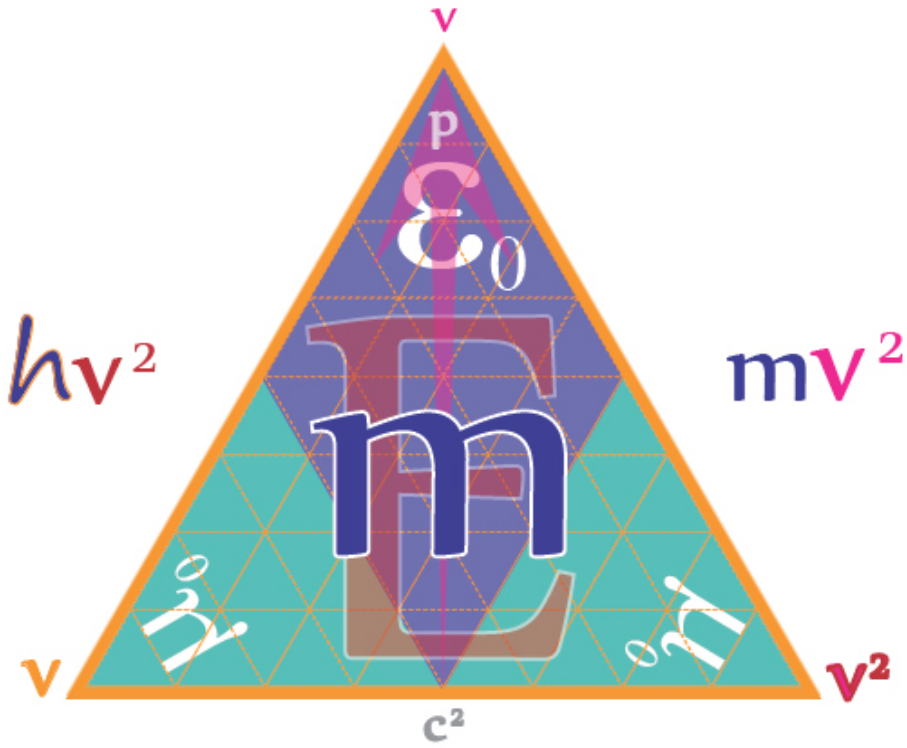
Energy-momentum relationship

The total number of Planck quanta [EM mass-Angular momenta] in any c^2 geometry
is directly related to the square of its momentum [EM mass-velocity]

Quantised
Energy-momenta

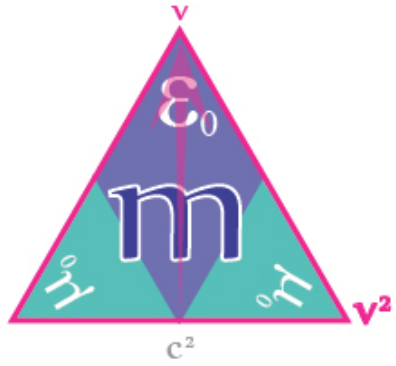
$$h = \frac{E}{v^2}$$





Classical
Energy-momentum

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



$E = mv^2$

EM mass-Energy
is a scalar property

mass-Energy quanta and velocity

The geometry of Energy produces the direct relationships
between Planck's constant-quanta and mass-Energy-momentum
within any c^2 geometry

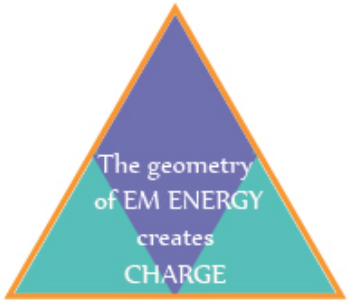
$E = pc$

Energy-momentum
is a linear property

$$mAv^2 = E = mv^2$$

EM mass-Energy is a derived physical property relating Quantised Angular momenta to Velocity

Charge is the Electro-Magnetic quantum mechanical property resulting from the intrinsic QAM of EM mass-Energy



The two possible geometries of ElectroMagnetic Energy flux reflect the classical Energy flow of Positive or Negative charge inductive loops

CHARGE

1.335704 e-20 C

QAM/EM field geometry

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

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

$$s$$

seconds

COULOMB

is defined as the charge transported by a steady current of one ampere in one second.

C

An elementary charge is 1.602845472 e-19 C

$$\frac{QAM}{[mv^2]}$$

mass velocity

QAM/Energy

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

$$\frac{s}{kg}$$

$$\left[\frac{hv^2}{QAM}\right]$$

planck quanta

Energy/QAM

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

$$\frac{kg}{s}$$

CURRENT

is the amount of electric charge passing a point per unit time

A

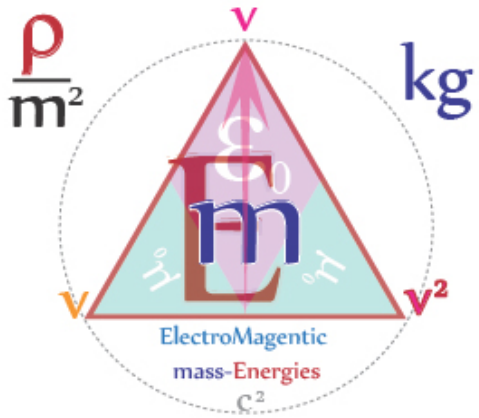
6.238904 e18 electrons passing a given point each second constitutes one ampere.

Quantum charges are created by intrinsic QAM geometry of equilateral EM Energies and provides the foundation for all interactions in EM mass-ENERGY-Matter

[it is usually measured in either Coulombs or Amperes]

EM Field Geometry

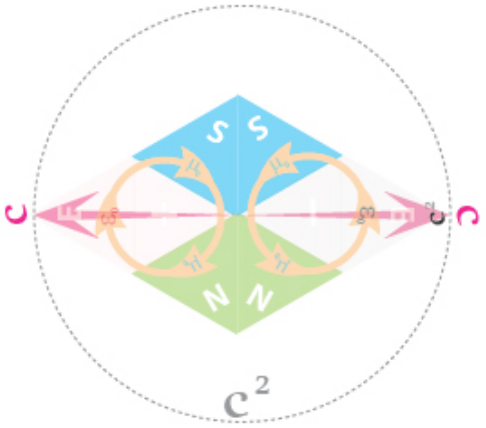
All EM fields are 2D
propagating fields



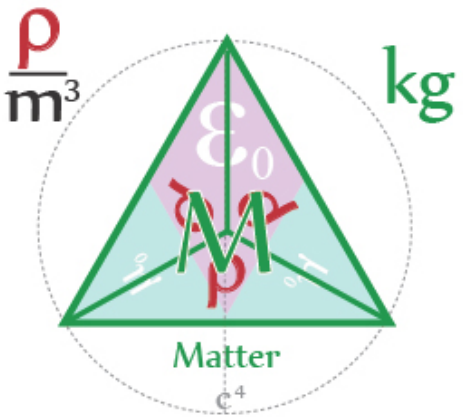
The Constant of Proportionality
between the co-ordinate geometries
used to measure EM masses and Matter is 'c'

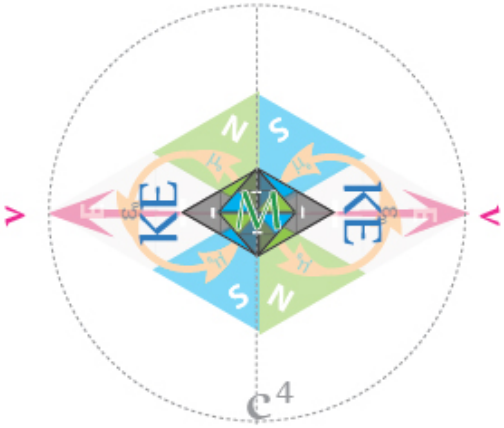
[299,792,458 m/s]

All Matter are 3D
EM standing waves



EM fields create 'action at a distance'





Electrostatic Matter
has opposing 2D KEM fields

Charge geometry

Electric charge is a fundamental conserved property of matter that causes it to experience a force when near other electrically charged matter.
Electric charge comes in two types, called Negative and Positive, which cause and are subject to the Law of Interaction (formally Law of Attraction)

anti-Clockwise Energy flux

Clockwise Energy flux

q

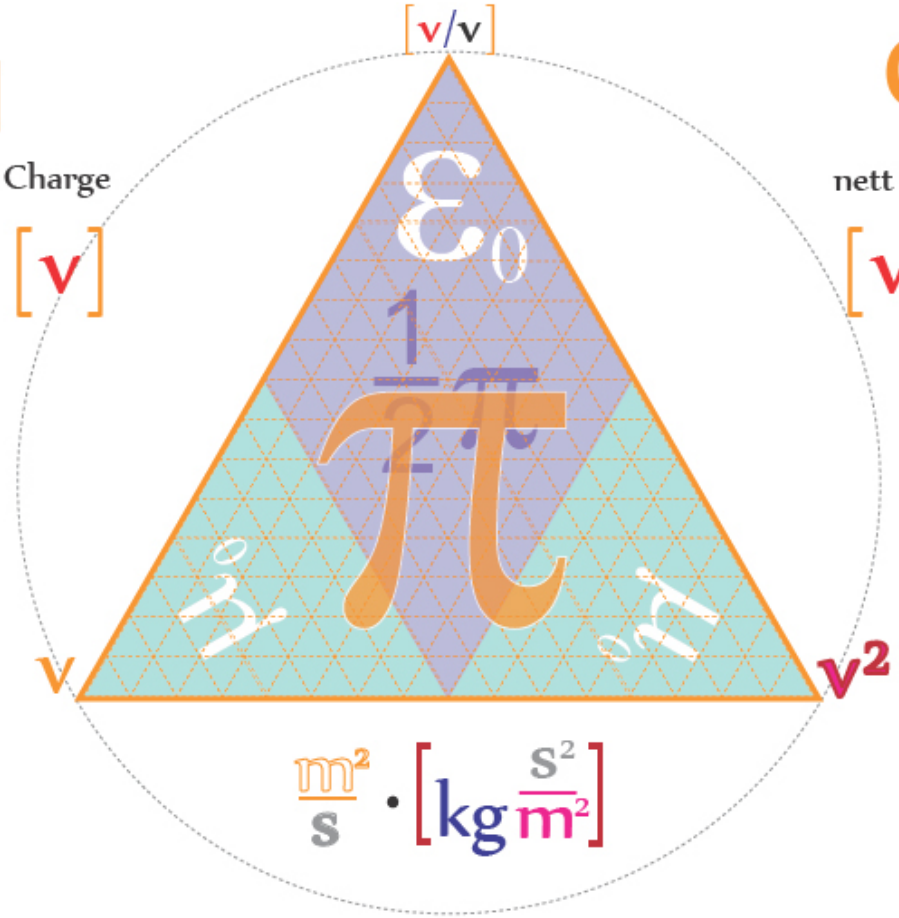
quantised Charge

$[\mathrm{v}]\ [\mathrm{v}]$

Q

nett Charge

$[\mathrm{v}/\mathrm{v}]$




Max Planck

$$E = h\nu.$$

The Energy of a system is comprised of a number of quanta

$$\hbar = \frac{h}{2\pi}.$$

A measure of the Electric components of charged EM fields


PAM Dirac

All Charges seek Equilibrium

Charge is velocity invariant

Historically defined as Electric charge it is actually the Quantised Angular Momentum of equilateral mass-Energy that provides the mechanics of mass-ENERGY-Matter differentiation and interaction

The SI unit of quantity of electric charge is the Coulomb, $C \approx \frac{s}{kg} \approx As$ which can also be expressed as Amp-seconds

Energy quantisation

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

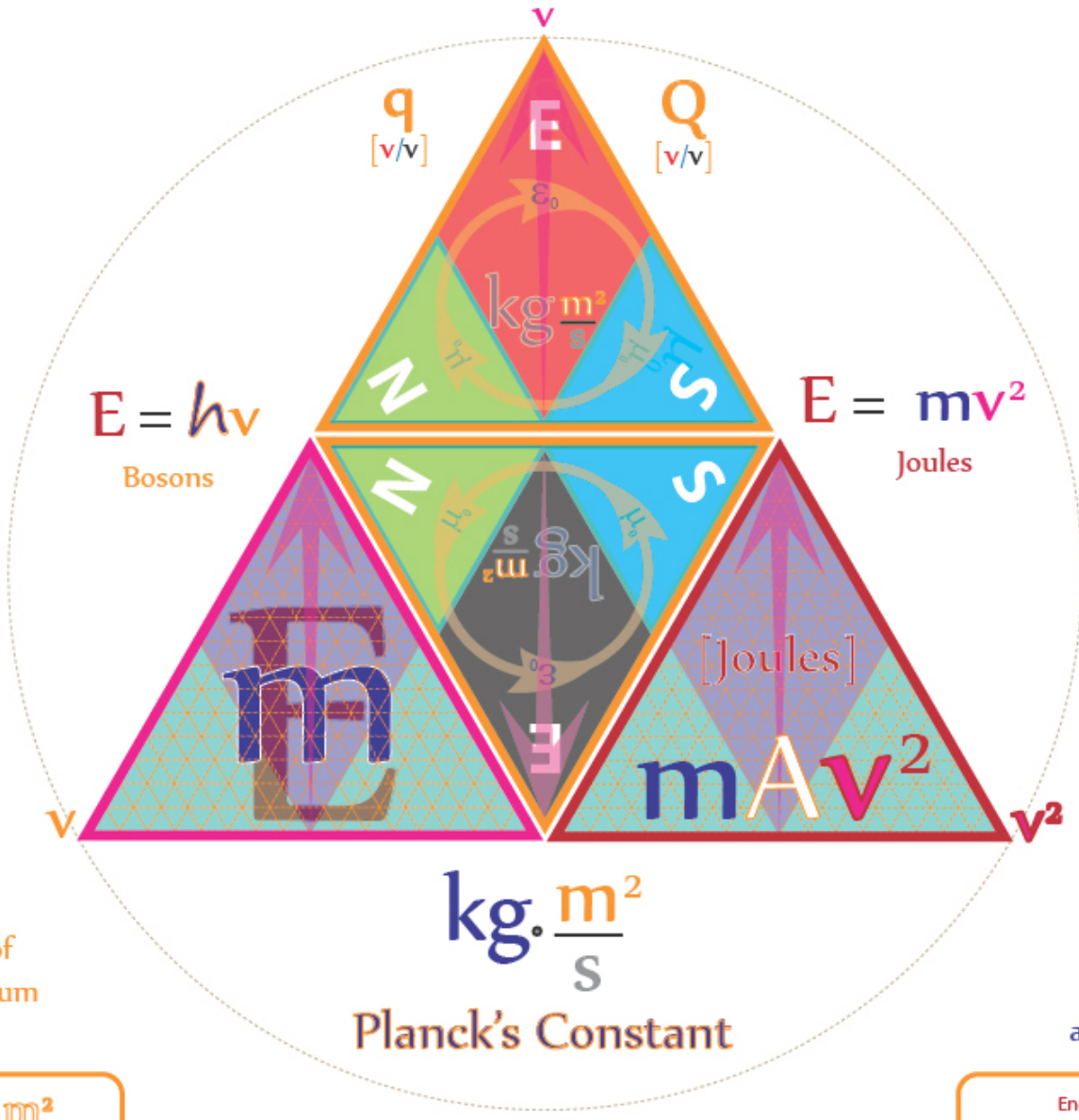
The Direction of Time
determines Charge

q

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

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

seconds



The Direction of Time
determines Charge

q

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

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

seconds

Transverse quanta
create Quantum Levels

Scalar (nett) quanta
create Square Energies

The Tetryonic geometry of
Quantum Angular Momentum
creates Charged masses

Planck's Constant is in fact
Tetryonic mass x Angular Momentum
$kg.\frac{m^2}{s}$

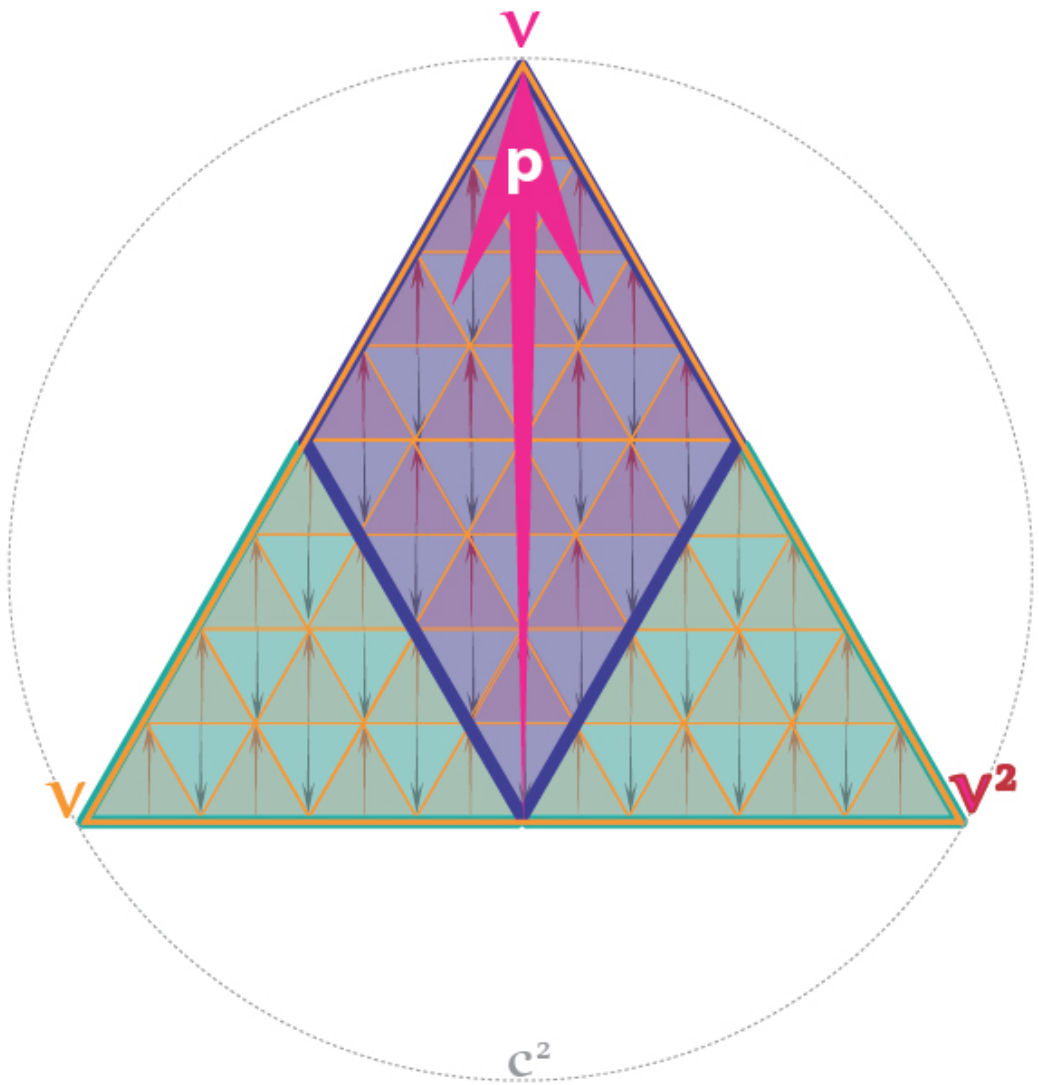
n.Planck quanta per second is Energy

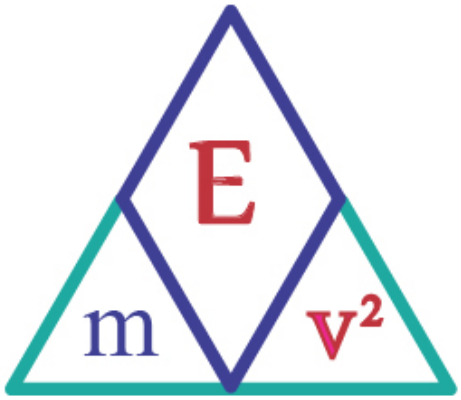
Planck's Constant
can be described in
a number of differing ways

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

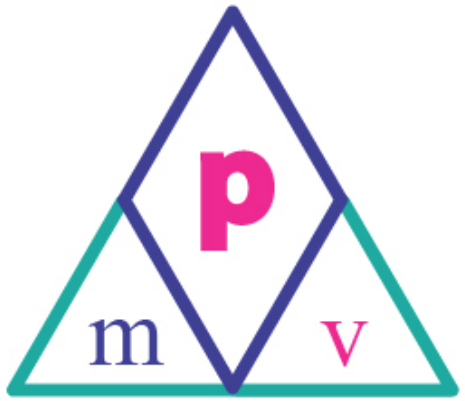
Momentum x Distance $kg.\frac{m}{s}.m$

Tetryonic Mnemonics





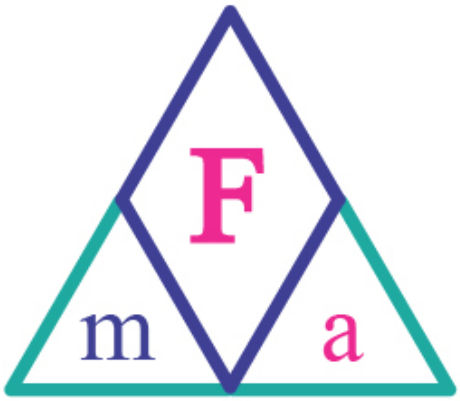
Energy



Momentum

velocity of Energy

Many physical relationships
are can be represented with
Equilateral geometries



Force

PHYSICAL UNITS

Physics is filled with numerous units of measurement comprised of various inter-related components of physical measurement

QAM	Quantised Angular Momentum	$\frac{m^2}{s}$
v	Velocity	$\frac{m}{s}$
$\frac{1}{c^2}$	EM Fields	$\frac{s^2}{m^2}$
C	As Charge	$\frac{s}{kg}$
A	$\frac{C}{s}$ Current	$\frac{kg}{s}$
λ	Wavelength	m
$\tilde{\nu}$	Wavenumber	$\frac{1}{m}$
f	Frequency	$\frac{1}{s}$
T	Period	s

h
Planck's Constant
$kg\frac{m^2}{s}$

k
Coloumb's Constant
$N\frac{m^2}{C^2}$

G
Newton's Constant
$N\frac{m^2}{kg^2}$

g
gravitational acceleration
$\left[\frac{N}{kg}\right]$

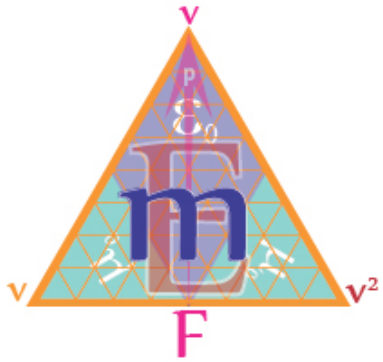
Using Tetryonic geometry a complete understanding of terms such as Charge, mass, Matter, Permittivity and Permeability are revealed along with their role in physical mechanics

kg	EM mass	m
$\frac{m}{s^2}$	Acceleration	a
$\frac{1}{c^4}$	Matter standing-wave fields	$\frac{s^4}{m^4}$
$\frac{A^2\ s^4}{kg\ m^3}$	$\frac{F}{m}$ Electric Constant	ε_0
$\frac{kg\ m}{A^2\ s^2}$	$\frac{H}{m}$ Magnetic Constant	μ_0
$kg\frac{m}{s}$	Momentum	p
$kg\frac{m}{s^2}$	Force	F
$kg\frac{m^2}{s^2}$	Energy	E
kg	Matter	M

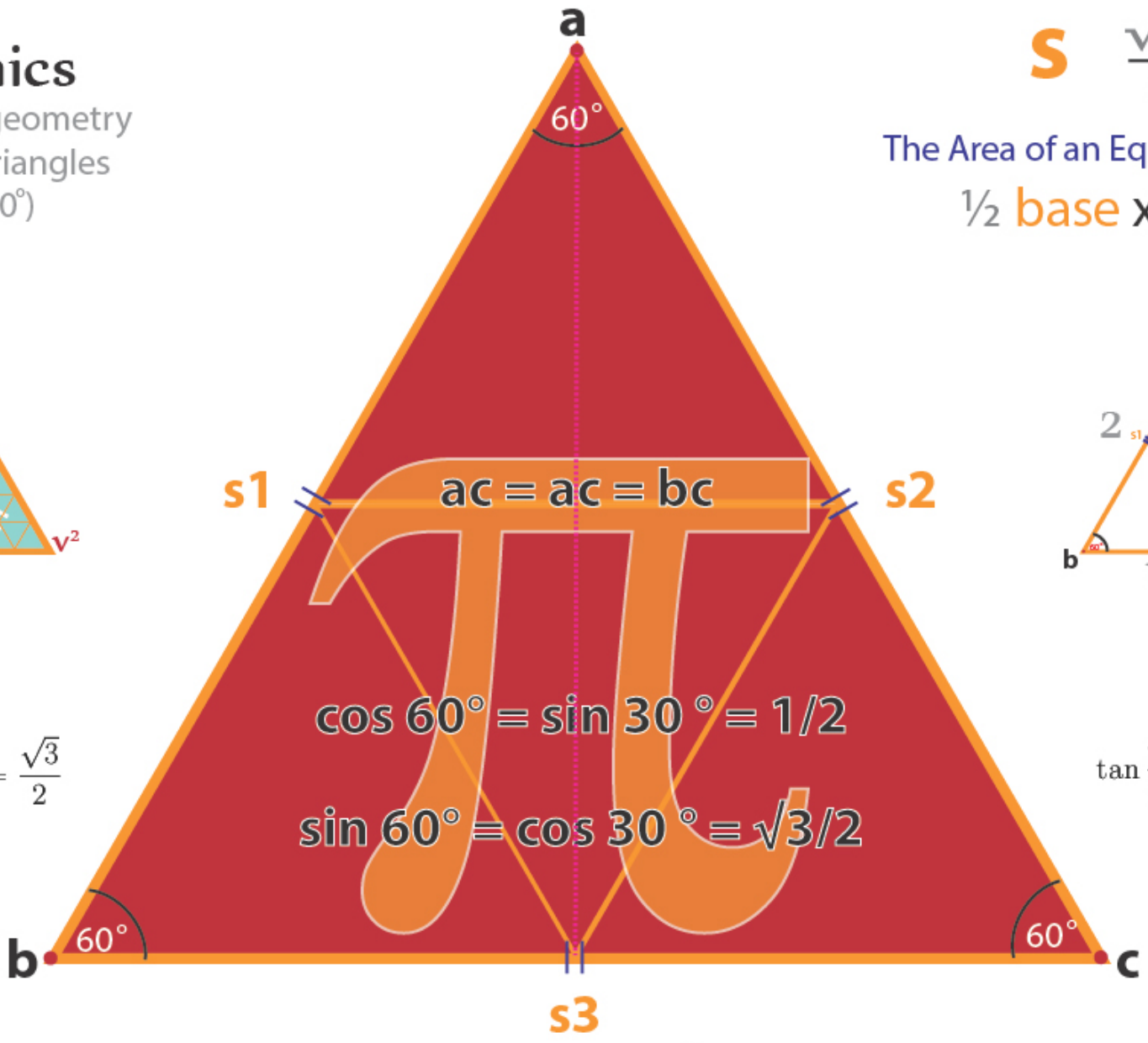
Tetryonic geometry

Tetryonics

is based on the geometry
of Equilateral Triangles
(60°- 60°- 60°)



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

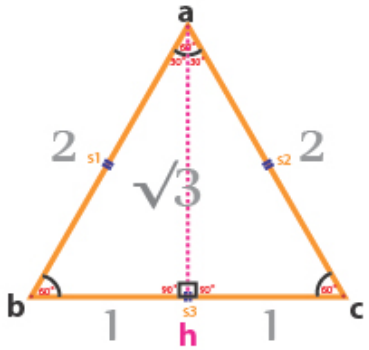


$$\cos\frac{\pi}{3} = \cos 60^\circ = \frac{1}{2}$$

S $\frac{\sqrt{3}}{2}$

The Area of an Equilateral triangle

½ base x height

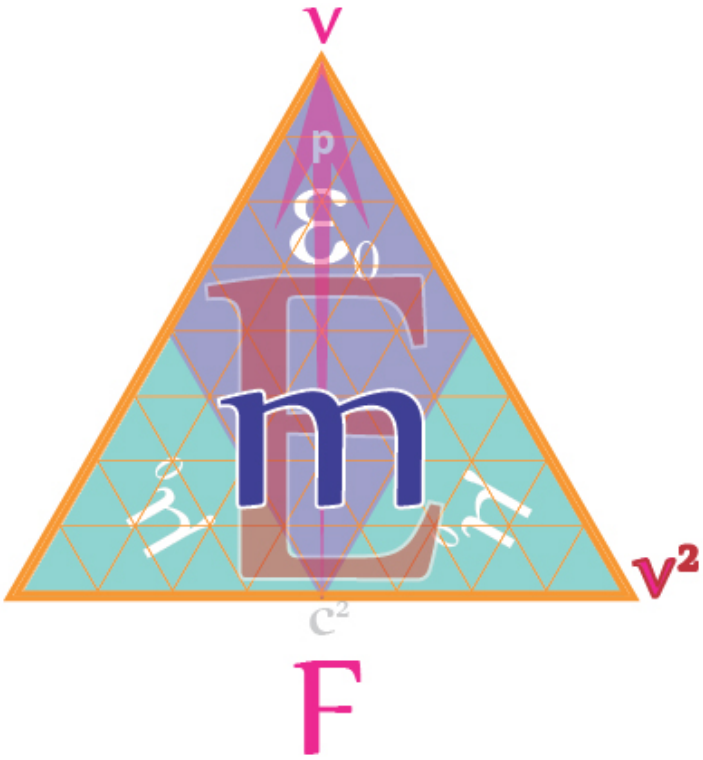


$$\tan\frac{\pi}{3} = \tan 60^\circ = \sqrt{3}$$

Tetryonic vs. Pythagorian geometry

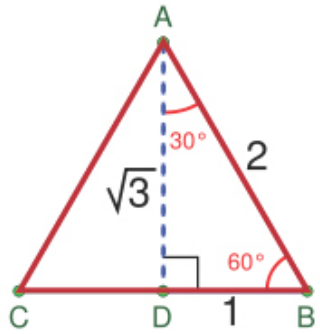
Physics is geometry,
one cannot be separated from the other

The source of all the physical relationships between geometry and the constants in Physics is the Equilateral Triangle (and all texts must be corrected)



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

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



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 the other apsects of Nature.

$$\mathbf{p} = m\mathbf{v}$$

6.629432351 e-34 J

Planck quanta

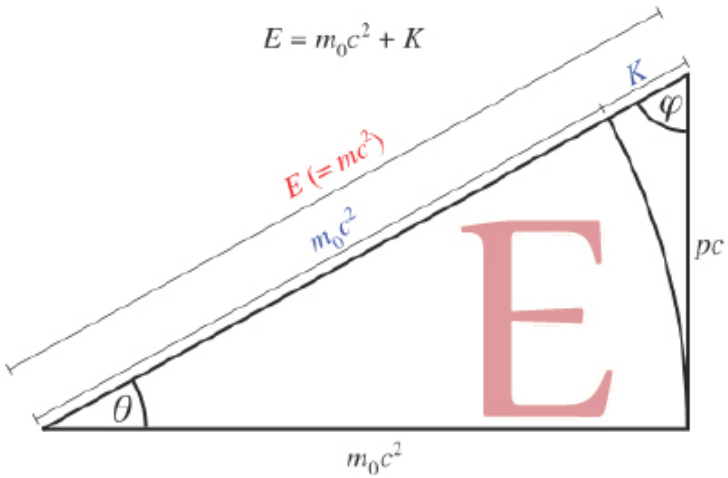
$$[mAv^2]$$

mass velocity

7.376238376 e-51 kg

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

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 energy, mass, or distance in spacetime is the sum of the components squared.

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 tot the Energy content of a body by the velocity of Energy

$$E = mc^2$$

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.

In fact π is a constant reflective of the geometry of Equilateral triangles [TETRYONICS]

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:

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

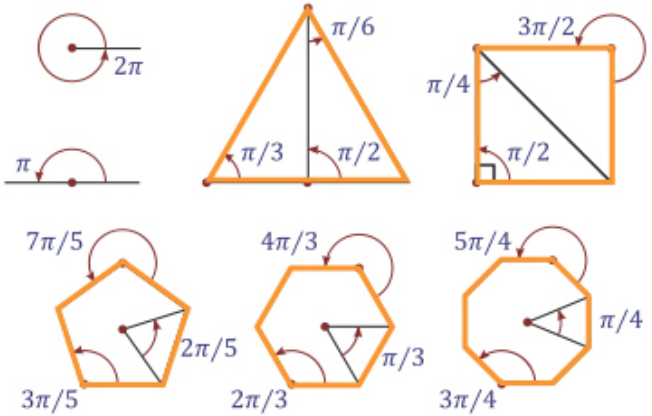
and the Gaussian formula for a Normal Distribution:

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

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

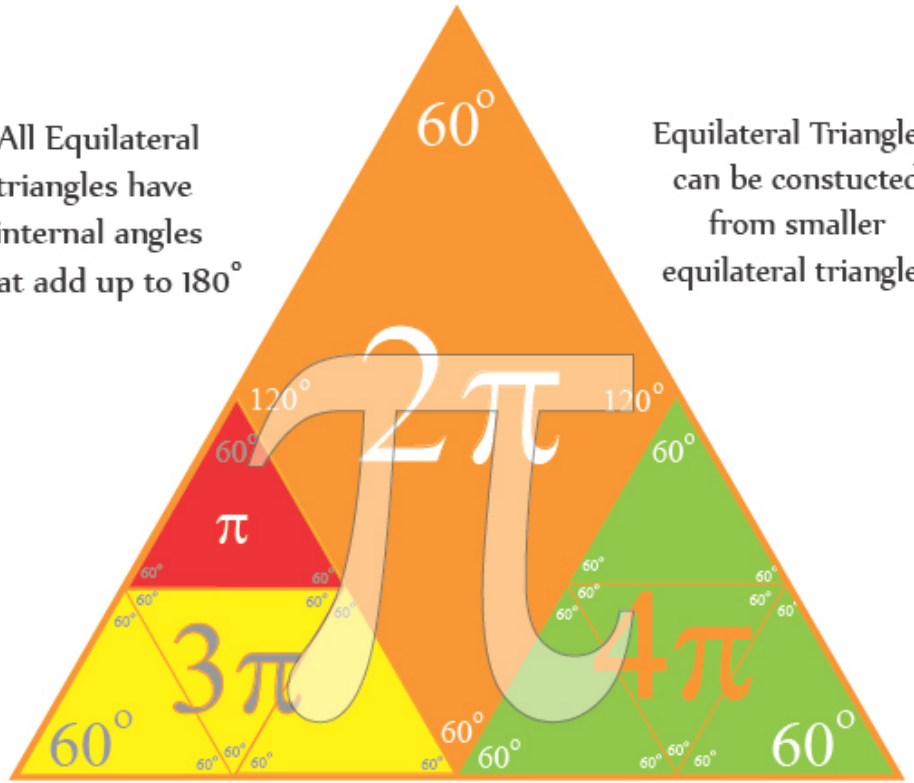
$$\pi = \frac{A}{r^2}.$$

radians



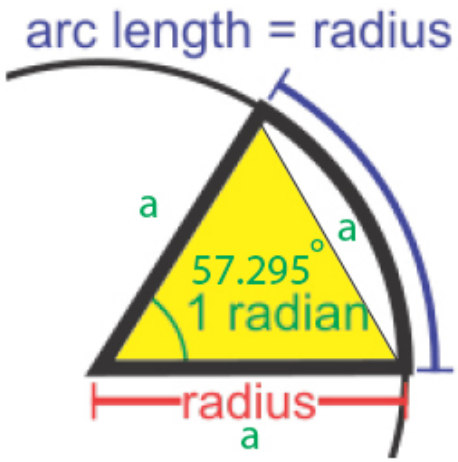
All Equilateral triangles have internal angles that add up to 180°

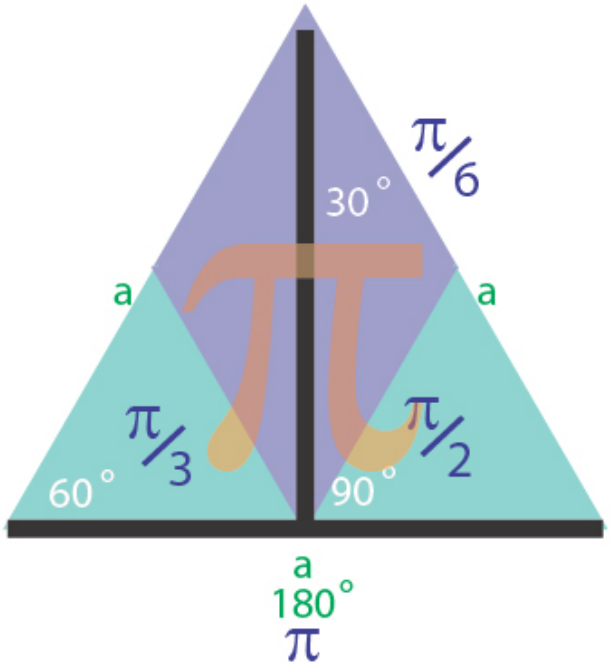
Equilateral Triangles can be constucted from smaller equilateral triangles

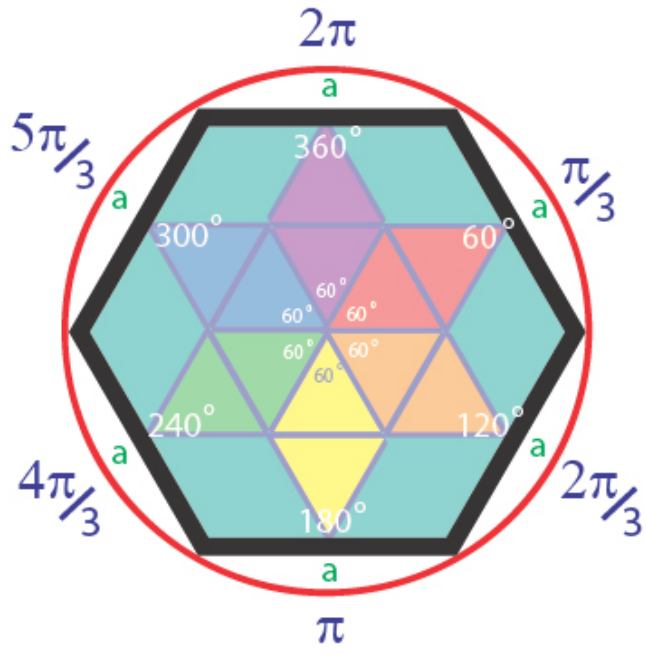


$$\pi = 180^\circ$$

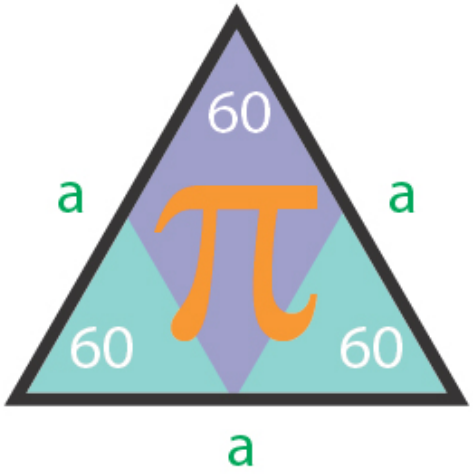
Tπ geometries



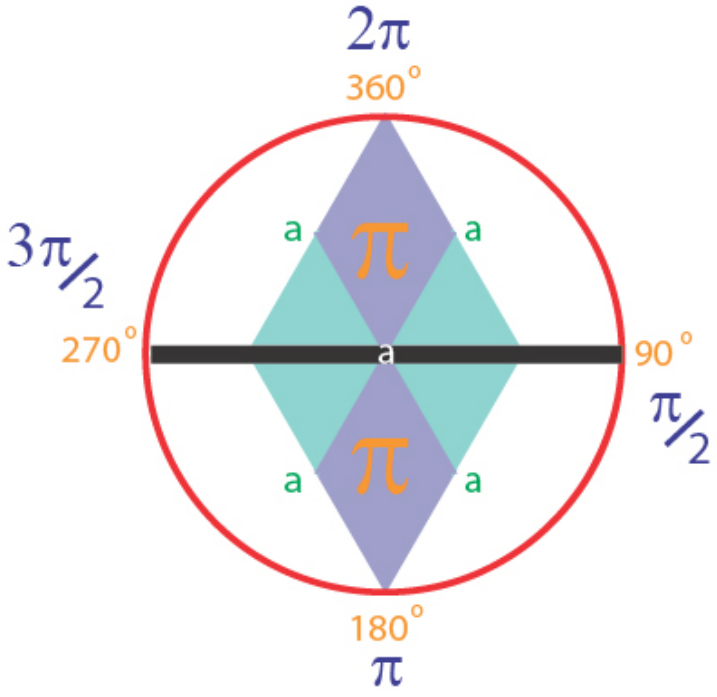




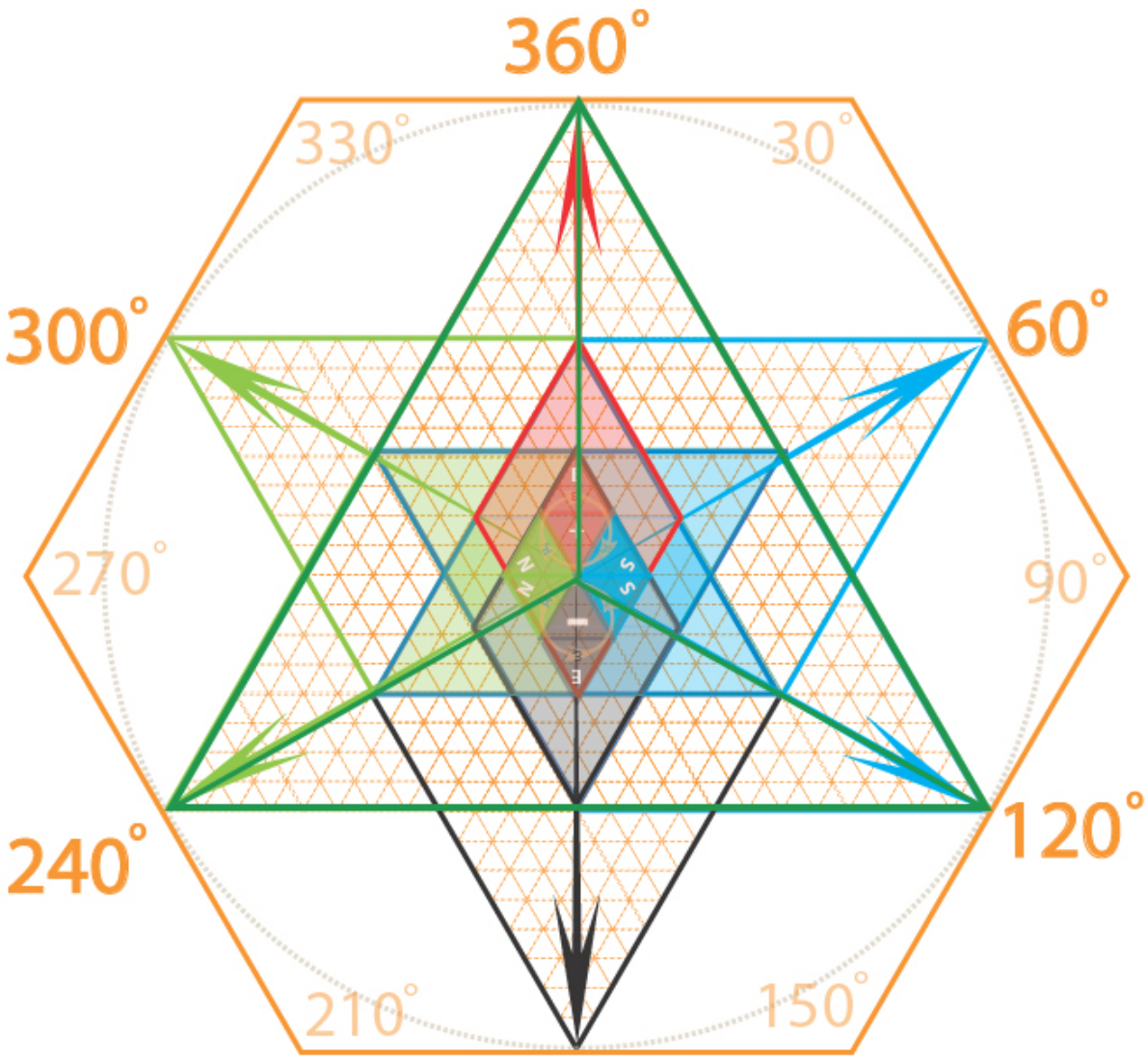
An equilateral triangle can be considered
a geometrical equivalent of π radians



30°	π/6	240°	4π/3
60°	π/3	270°	3π/2
90°	π/2	300°	5π/3
120°	2π/3	360°	2π
180°	π		



Tetryonic Cardinal Angles



Q

Charge

E

Energy

Space

Time

Matter

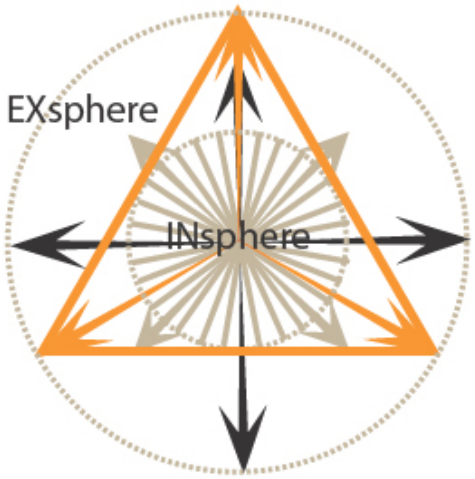
mass

M

m

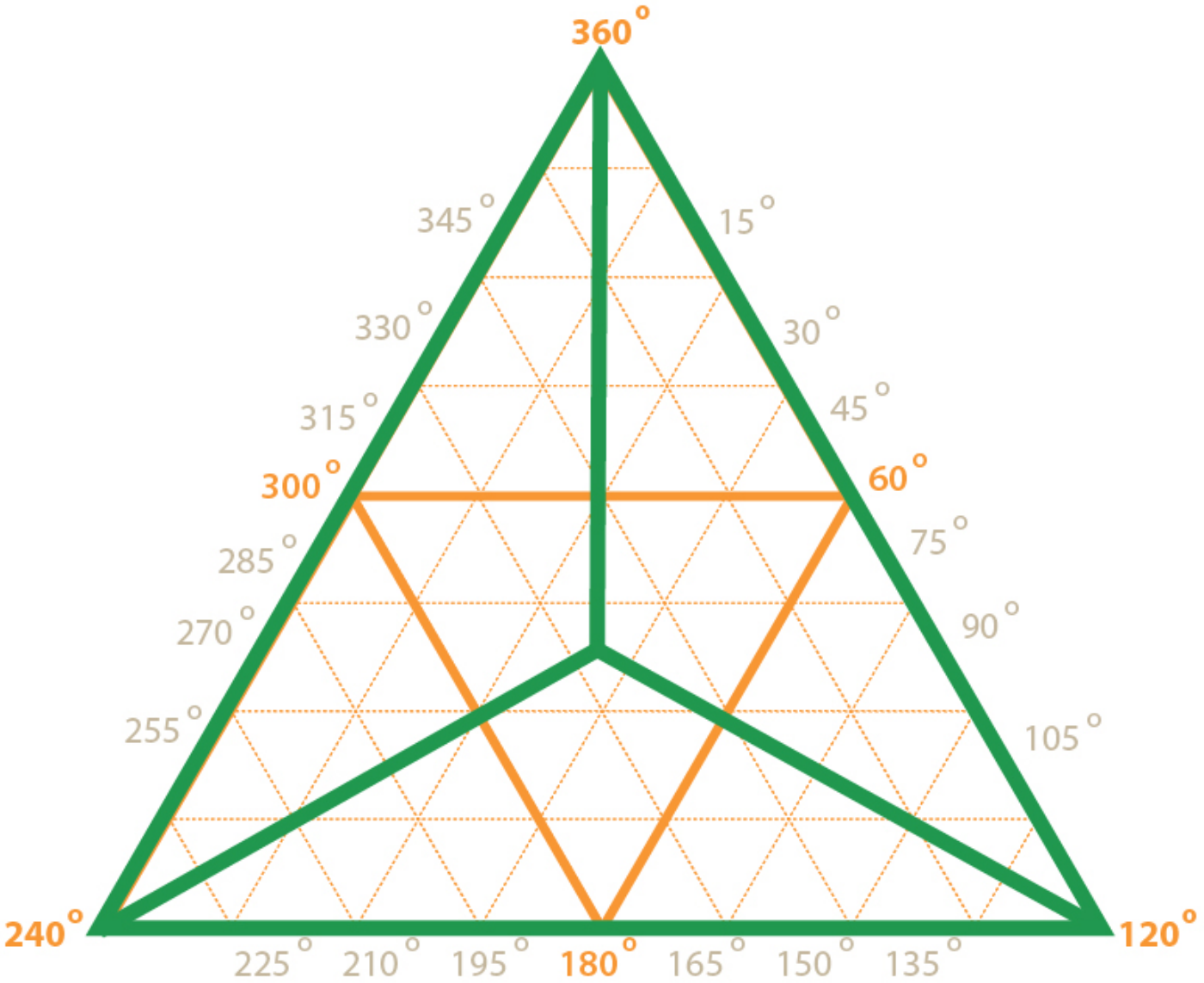
Light

ALL
mass-Energy-Matter
geometries
stem from
Equilateral
Tetryonic geometries

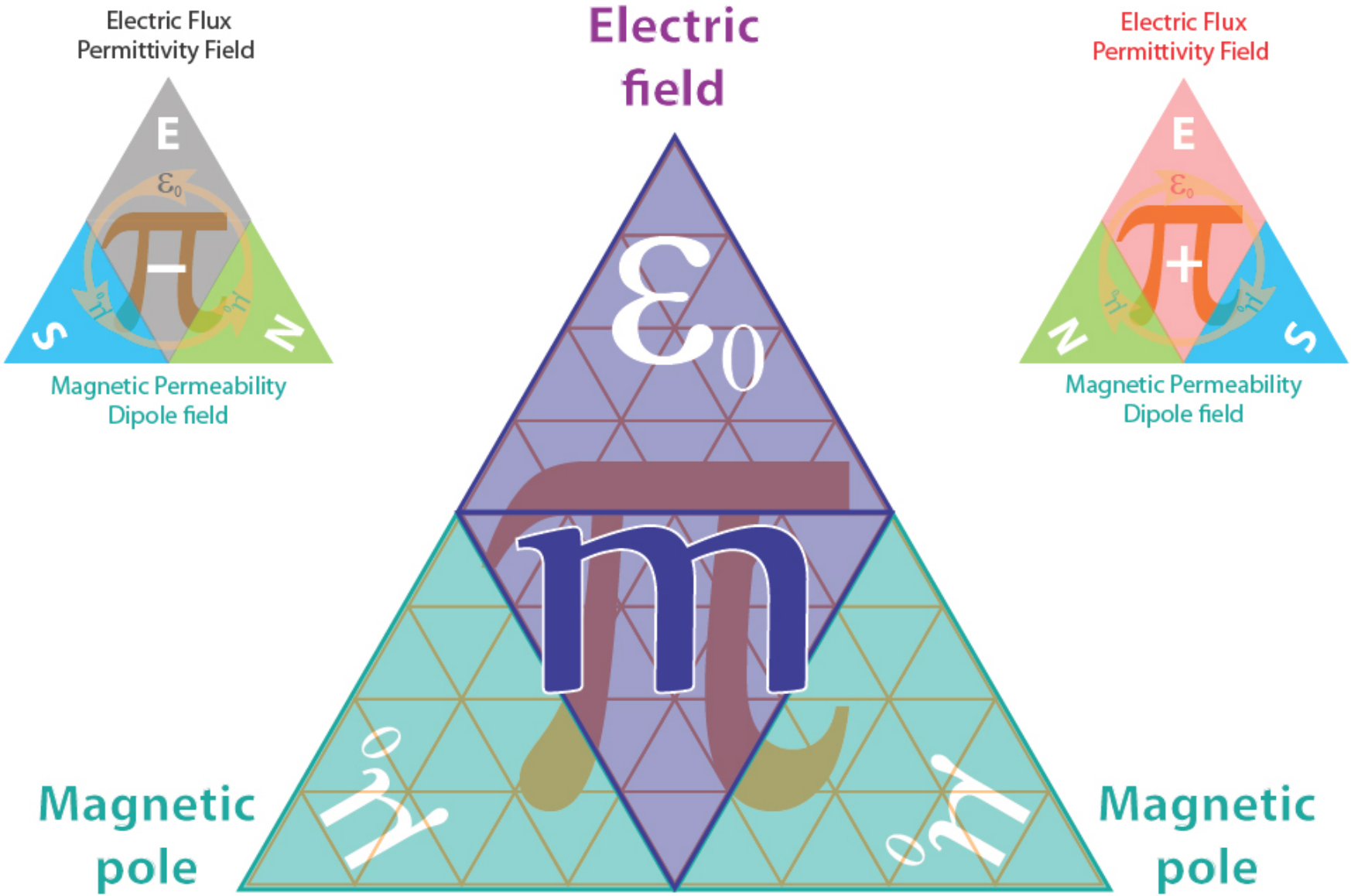


15°	105°	195°	285°
30°	**120°**	210°	300°
45°	135°	225°	315°
60°	150°	**240°**	330°
75°	165°	255°	345°
90°	**180°**	270°	**360°**

Physical Angles



Tetryonic geometry



All EM mass-Energy-Matter & EM fields have
EQUILATERAL [TRIANGULAR] geometries

The Golden Triangle

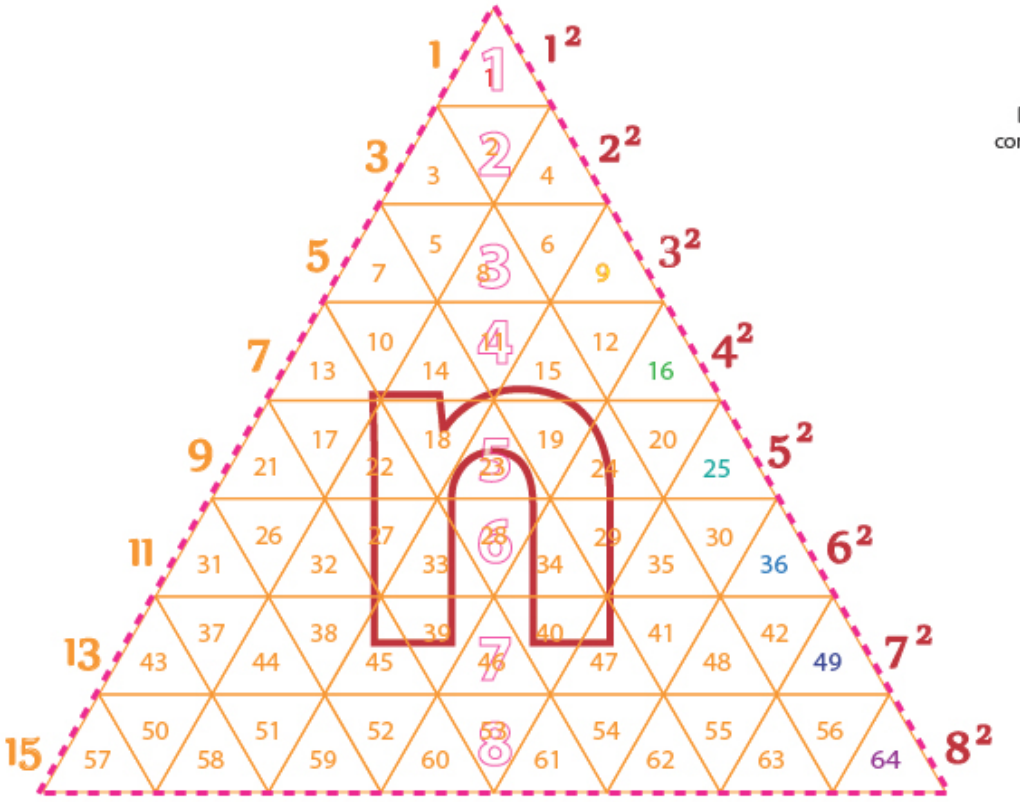
Planck quantum

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

$$E = {}^{\text{ODD}}n\pi\left[\left[{}^{\text{Planck quanta}}hv\right]\right]$$

$$v$$

Square Root



Tetryonic quanta

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

$$E = {}^{\text{SQUARE}}n\pi\left[\left[{}^{\text{Planck quanta squared}}hv^2\right]\right]$$

$$v^2$$

All energy levels and their quanta are directly related through velocity

$$3 = 3.[1]$$
$$8 = 8.[1]$$
$$25 = 25.[1]$$

Tetryonic geometry [Tπ]
refines Planck's quantum formula from
a generalised equation for Energy quanta
into a Geometric equation for Energy-momenta squared
[all square numbers can be expressed as Integers]

$$3 = 3.[1^2]$$
$$8 = 2.[2^2]$$
$$25 = 1.[5^2]$$

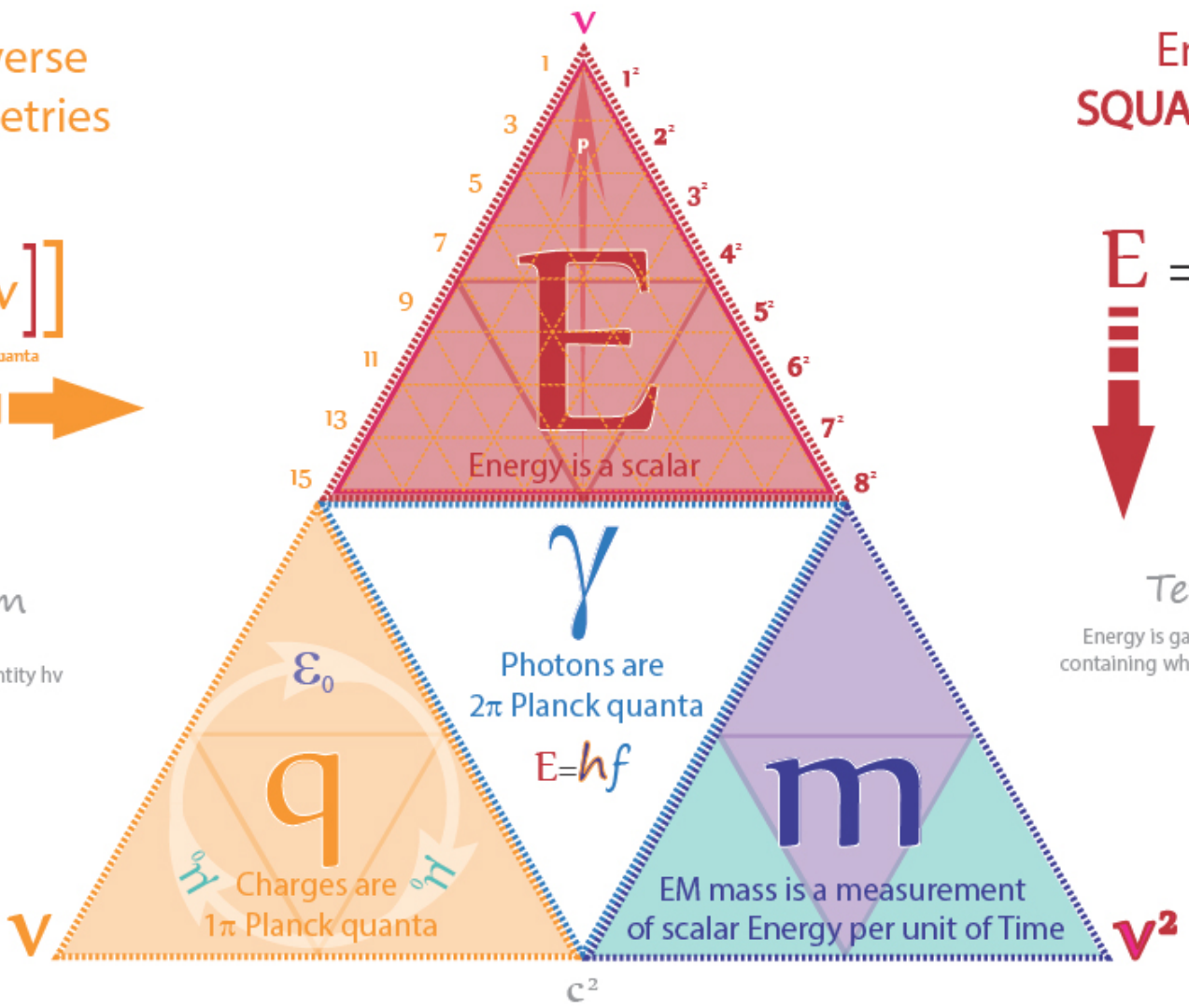
Energy Field Geometries

All scalar Energy is comprised of Transverse and Longitudinal masses
all of which have Equilateral geometries

Charge is a conserved force

Energy is a conserved force

$E=pv$



Bosons are transverse
ODD planck geometries

$E = n\pi[[hv]]$

Planck quanta

Energy is scalar
SQUARE planck quanta

$E = n\pi[[hv^2]]$

Planck quanta squared

Planck quantum

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

Tetryonic quanta

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

$E=hv$

$E=mv^2$

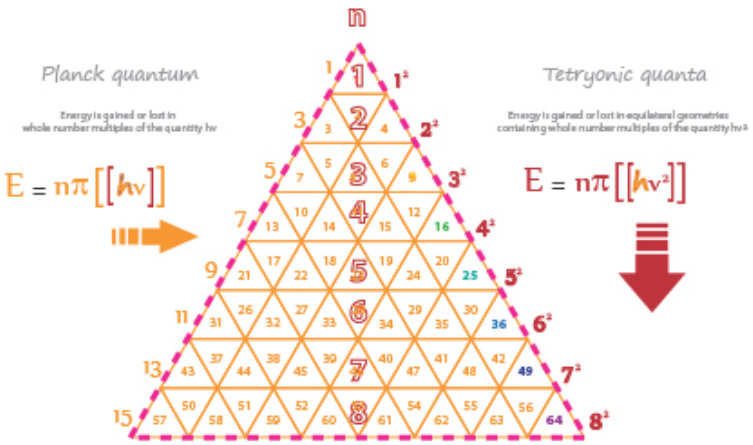
All energy is comprised of
EM fields

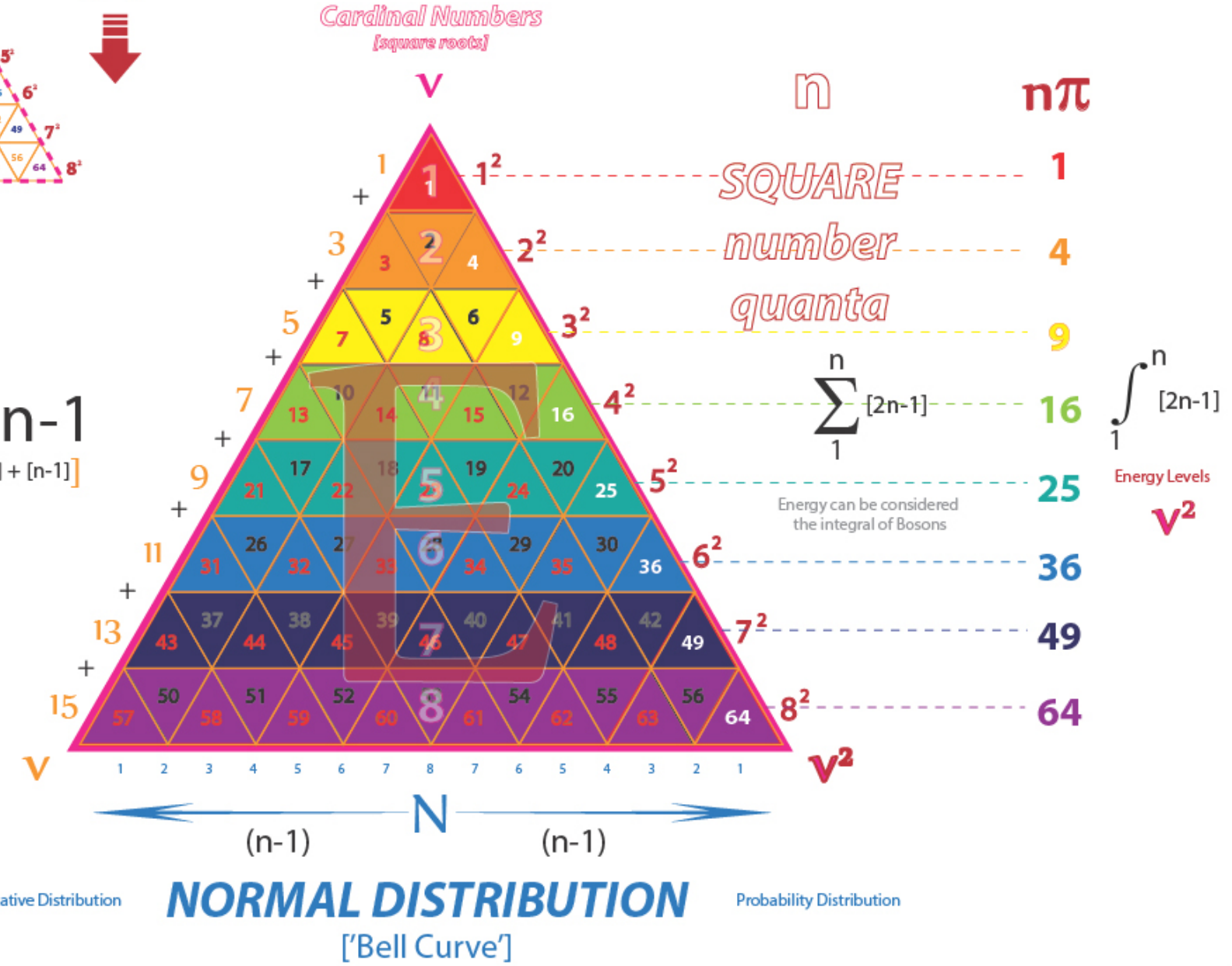
mass is ElectroMagnetic Energy

All square energy geometries
have component quantum levels

Energy Squared Levels

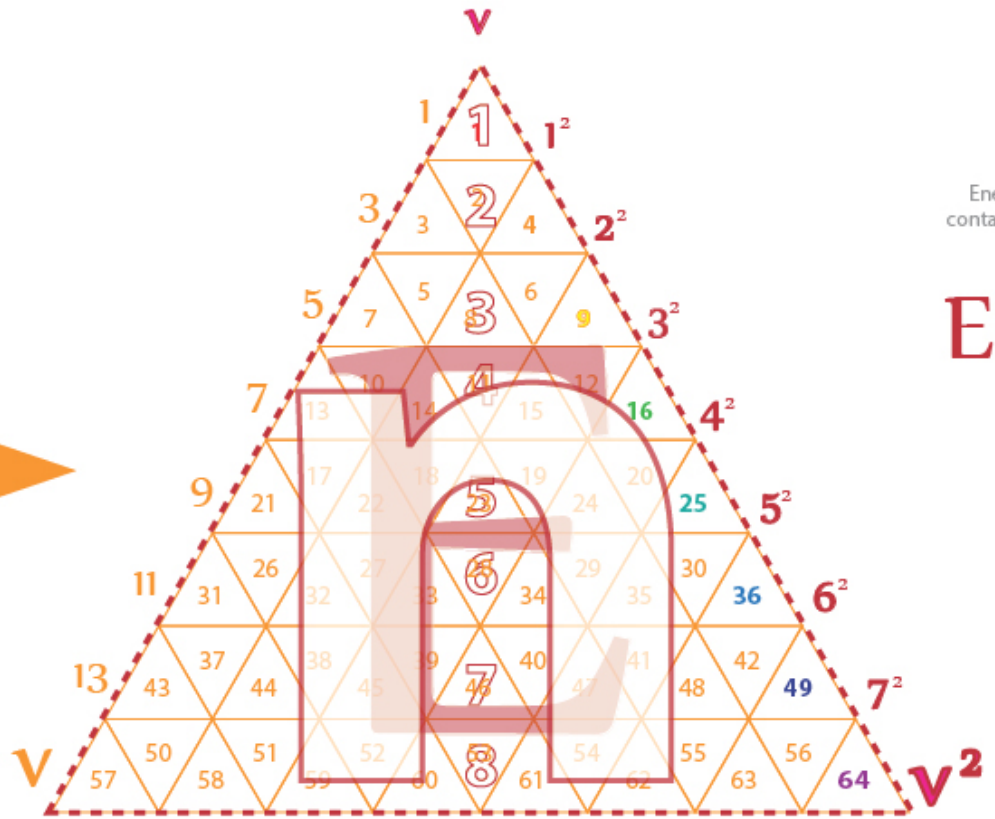
Tetryonic Quantum





Energy's quanta defined

Quantum levels



Planck quantum

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

$$E = n\pi[[hv]]$$

Planck quanta

Tetryonic quanta

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

$$E = n\pi[[hv^2]]$$

Planck quanta squared

Quantum

Quantum

The number of Quantum units in a system

$$v = f/2$$

ODD quanta

Quantum Levels

The Energy level of a system

EVEN quanta

Frequency

The number of repeating waveform sets in a system

$$2v = f$$

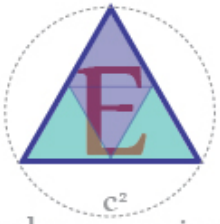
Tetryonic Geometry

E E

Energy is the total Planck quanta per second

$$E = n\pi\left[\left[mAv^2\right]\right]$$
Planck quanta; mass; velocity

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



EM mass is scalar energy in a c^2 geometry

$$n\pi_{\text{mass}}\left[\left[\varepsilon_0\mu_0\right].\left[mAv^2\right]\right]$$
EM Field; Planck quanta; ElectroMagnetic; mass; velocity

Q $\frac{A}{c^2}$

Charge is the nett Angular momentum per c^2 geometry

$$1\pi_{\text{Charge}}\left[\left[\varepsilon_0\mu_0\right].\left[mAv^2\right]\right]$$
EM Field; Planck quanta; ElectroMagnetic; mass; velocity

M $4n\pi\left[\frac{E}{c^2}\right]$

Matter is 2D mass-Energies propagating at c
in a Tetrahedral geometry

$$4n\pi_{\text{Matter}}\left[\left[\varepsilon_0\mu_0\right].\left[mAv^2\right]\right]$$
EM Field; Planck quanta; ElectroMagnetic; mass; velocity

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

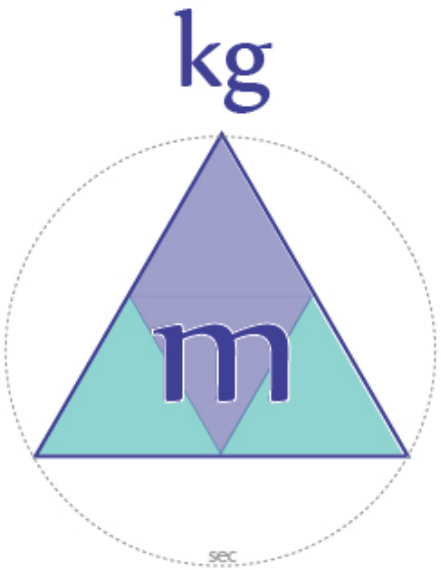
KE $\frac{1}{2}M\left[\frac{v^2}{c^2}\right]$

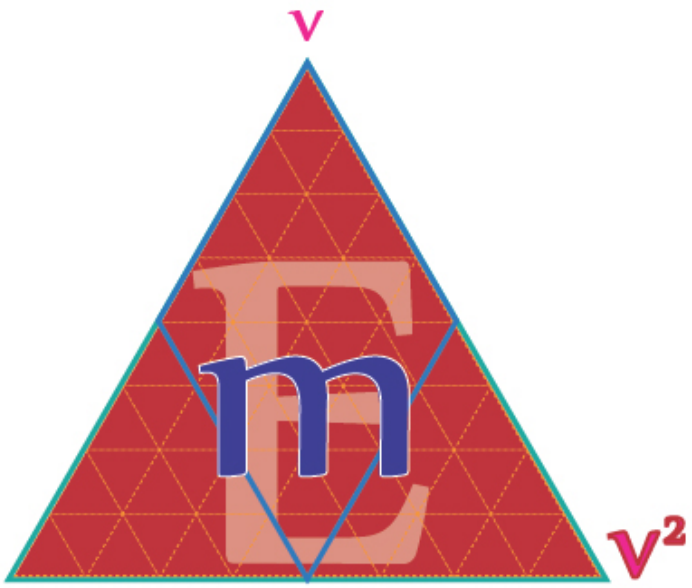
Kinetic Energy is the Electric field Energy
of Matter moving at v

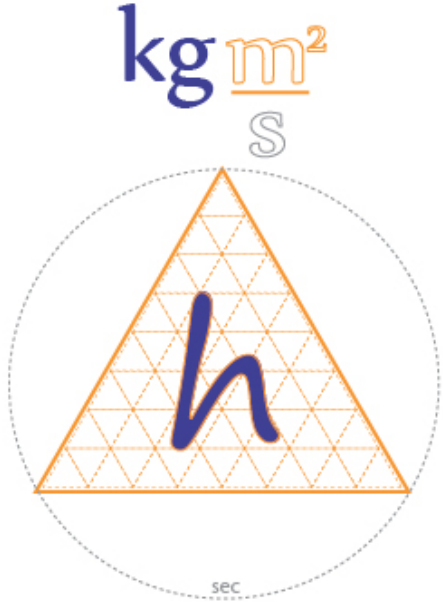
$$KE\ 2\pi_{\text{Photons}}\left[\left[\varepsilon_0\mu_0\right].\left[mAv^2\right]\right]$$
EM Field; Planck quanta; ElectroMagnetic; mass; velocity

KEM fields are Lorentz variant to accelerations

mass-Energy equivalence



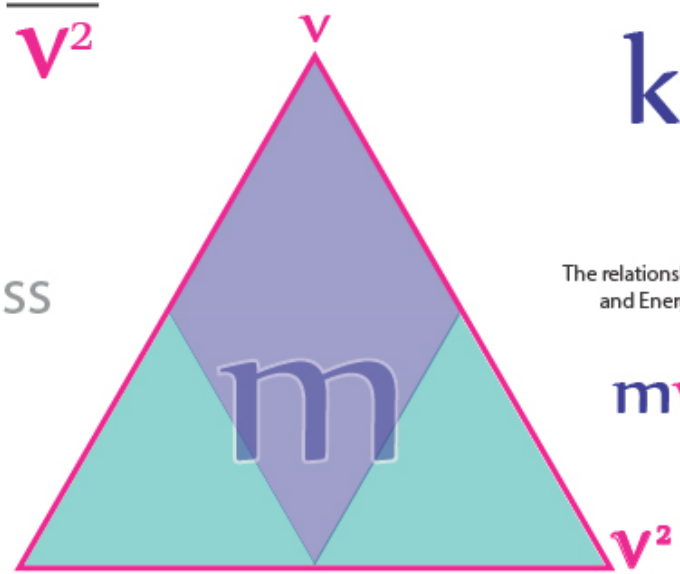




$$m = \frac{E}{v^2}$$

$$[mAv^2]$$

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

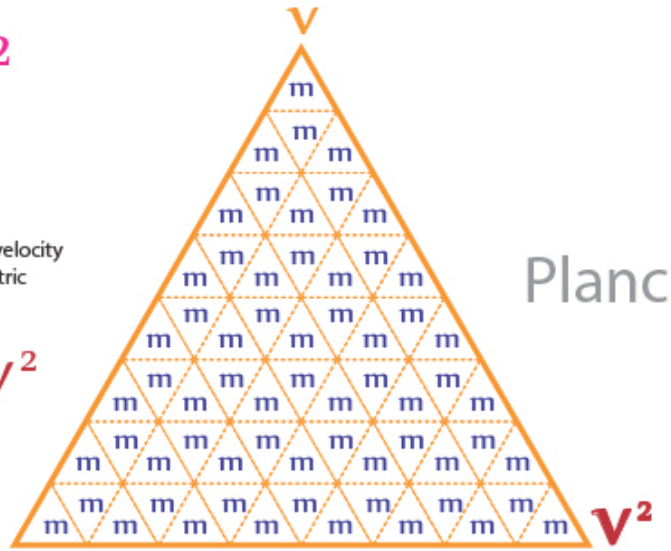


$$\frac{kg\,m^2}{s^2}$$

EM mass

The relationship between mass- velocity and Energy-quanta is geometric

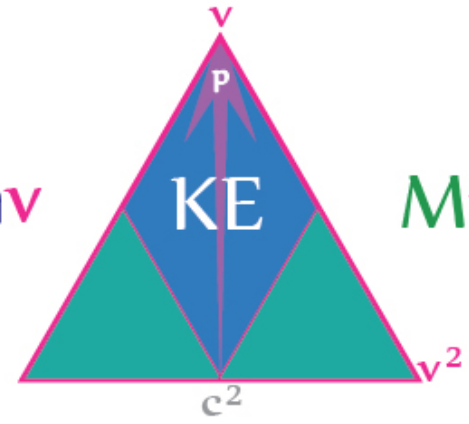
$$mv^2 = hv^2$$



Planck Quanta

mass-Energy geometries

$p=mv$

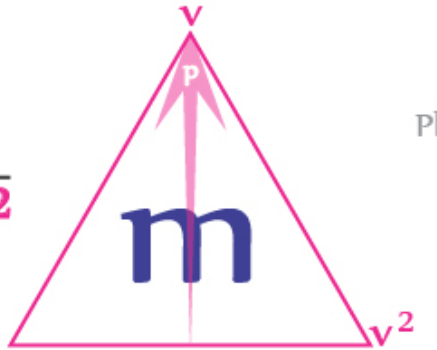


$Mv^2 = E$

EM mass

Energy

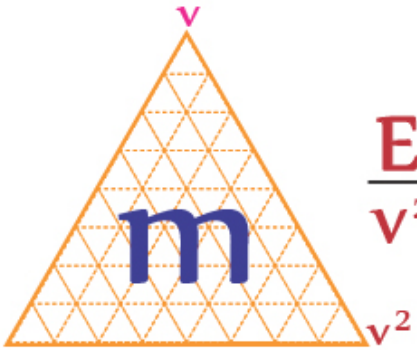
$m=\frac{E}{v^2}$



h

Planck's Constant

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

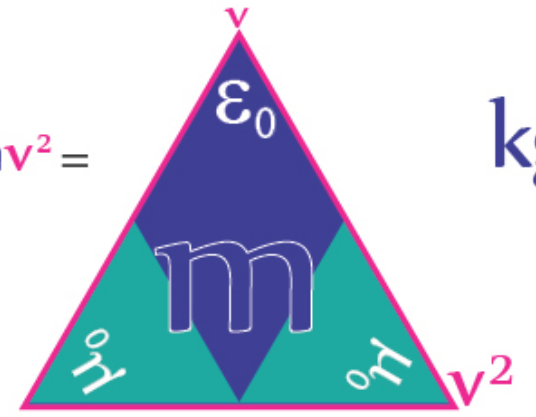


$\frac{E}{v^2} = h$

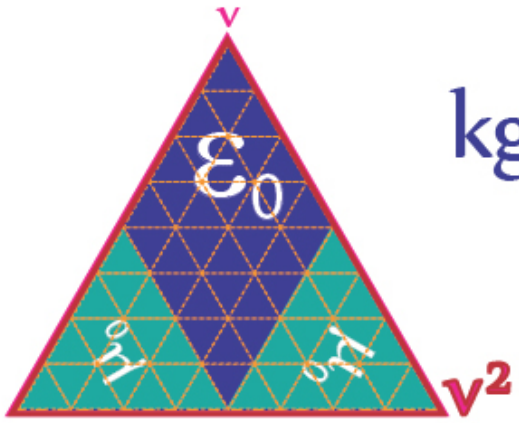
velocity

quanta

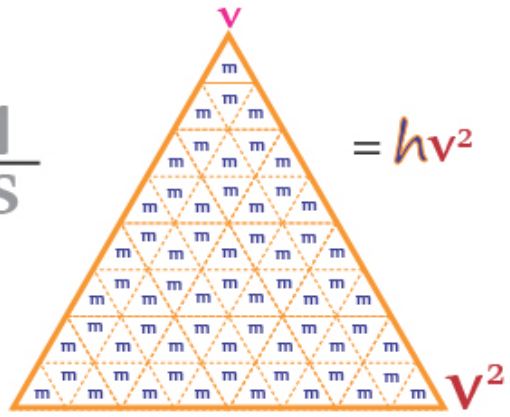
$mv^2 =$



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



$kg\,\frac{m^2}{s}\,\frac{1}{s}$



$= hv^2$

velocity squared

There exists an intrinsic geometric relationship between velocity and the quanta of Energy

quanta squared

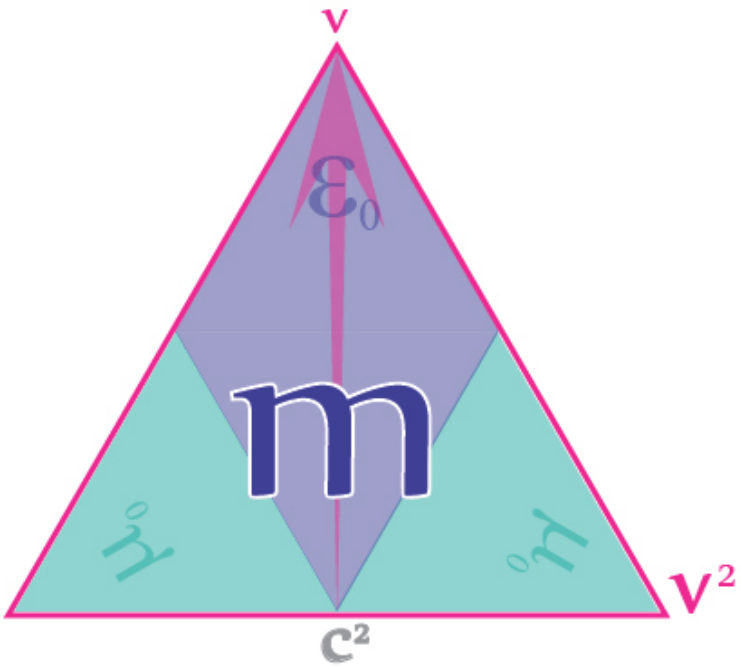
EM mass energy

$$E = mv^2$$

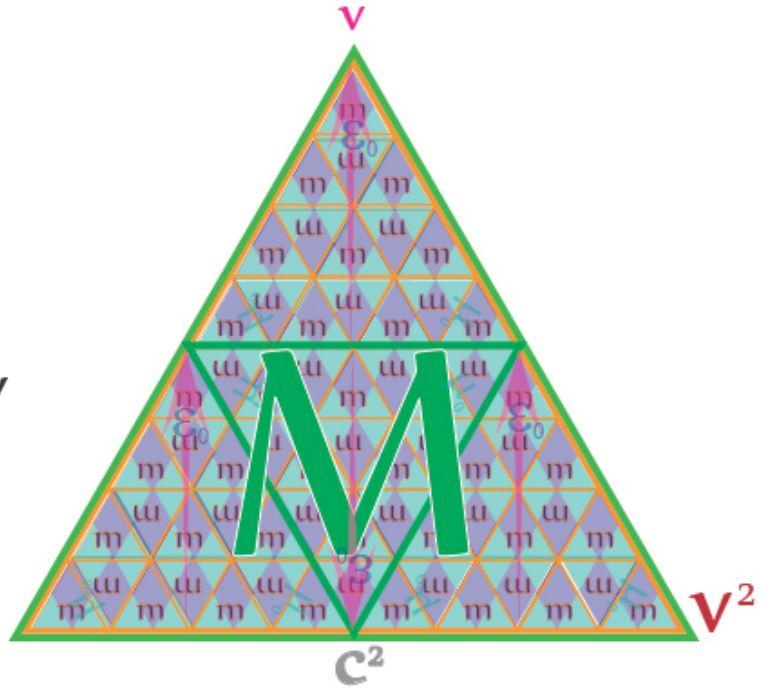
EM mass is related to Matter throught the velocity of light of 299,792,456 m/s [c]

EM Matter-Energy

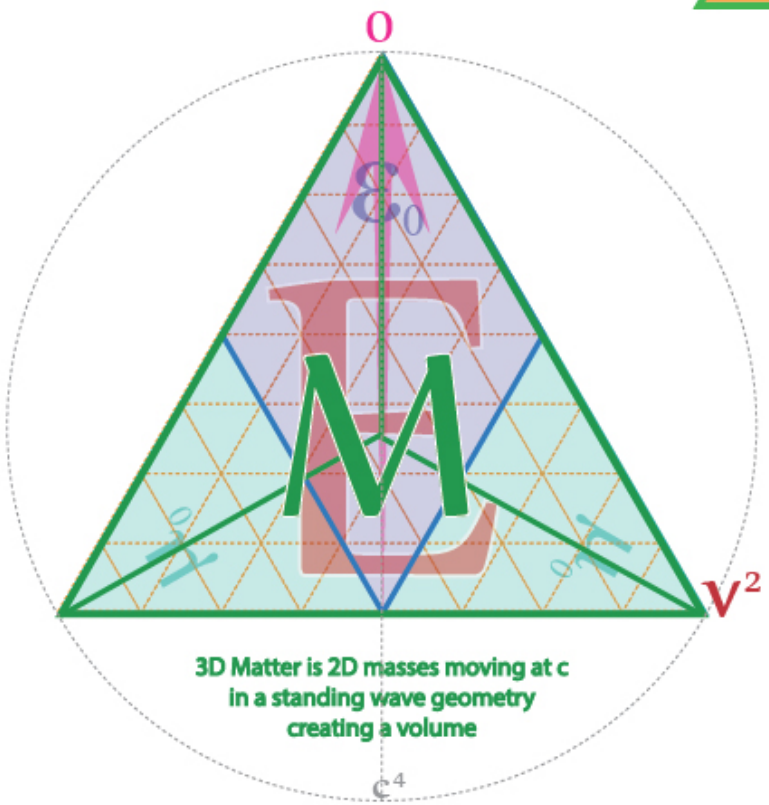
$$E = Mc^4$$



Electro-Magnetic mass-ENERGY



Matter's mass-Energy quanta



3D Matter is 2D masses moving at c in a standing wave geometry creating a volume

scalar EM mass

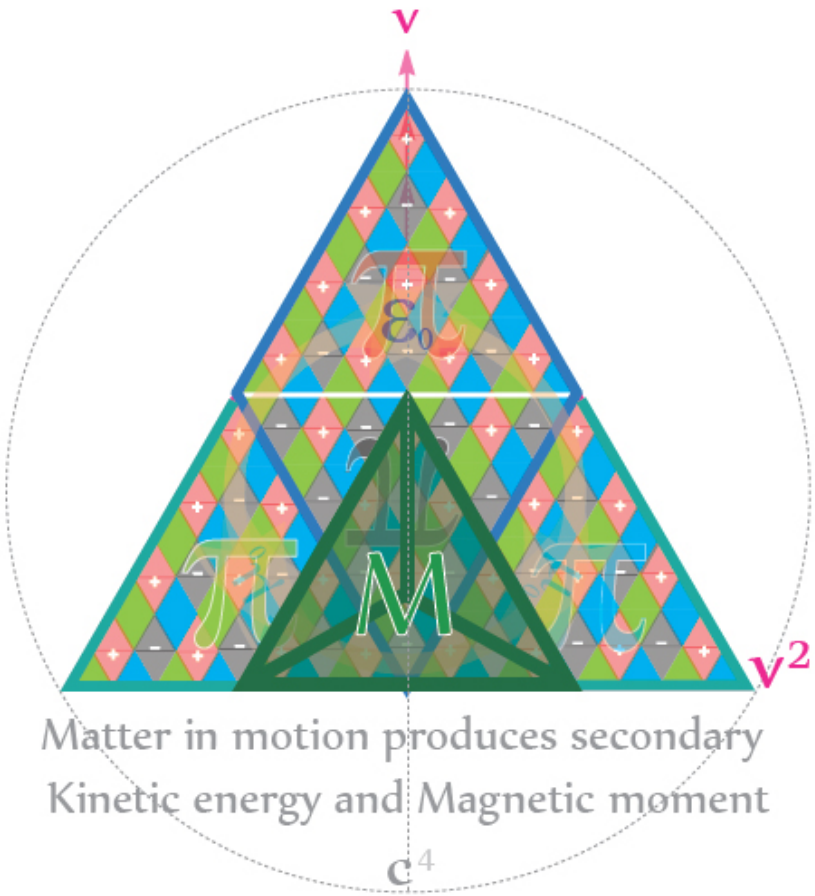
$$m = \frac{E}{v^2}$$

quantised mass

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

Kinetic Electro-Magnetic fields

[The Energies of Motion]

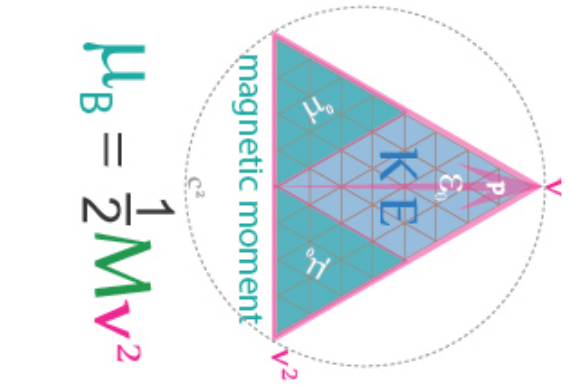


Matter in motion produces secondary Kinetic energy and Magnetic moment

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

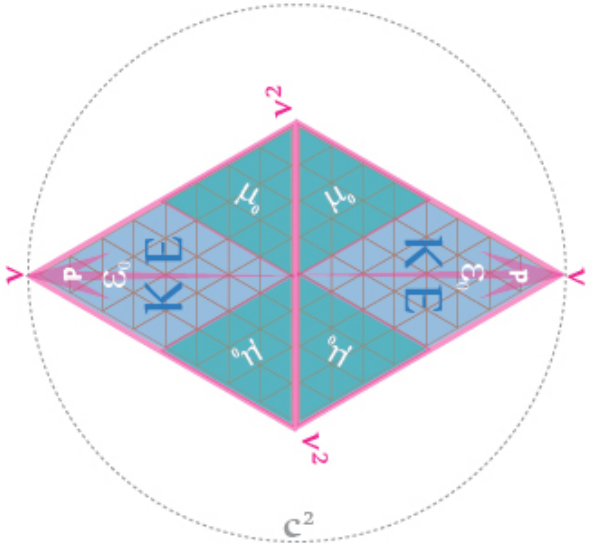
The Electric energy in any EM field is equal to the Magnetic energy

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



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

All Matter in motion possess momentum and kintiec energies contained in their extrinsic KEM fields

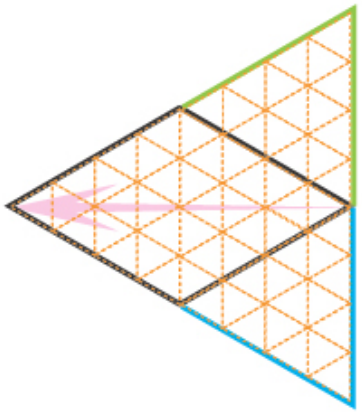


$$E_\gamma = 2\frac{mv^2}{c^2}$$

Theses 2D planar fields are subject to Lorentz factor corrections resulting from the acceleration of Matter geometries

Charge & Kinetic EM fields

are both nett π geometries with square number quanta

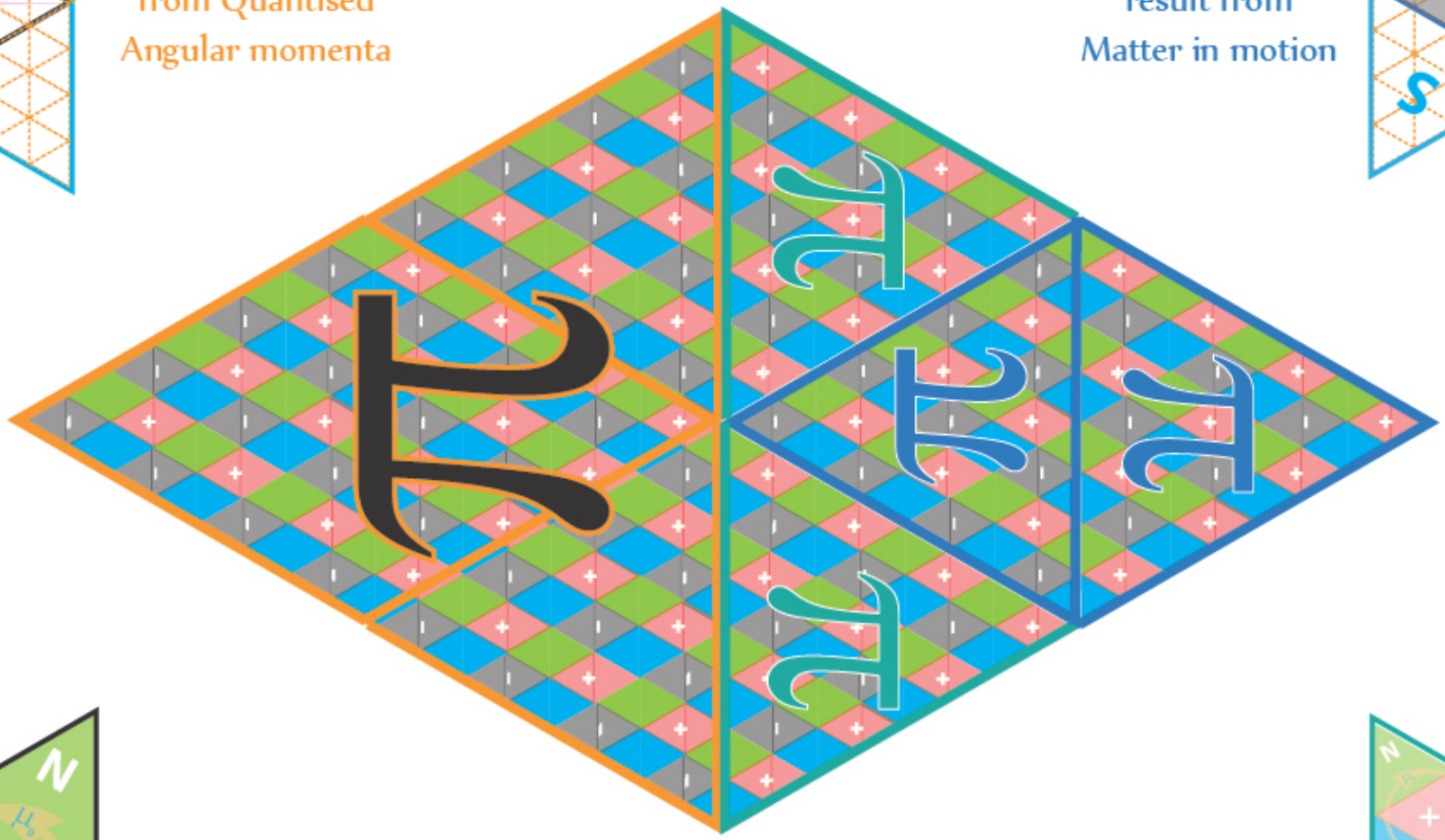


Charges result
from Quantised
Angular momenta

Kinetic Energies
result from
Matter in motion

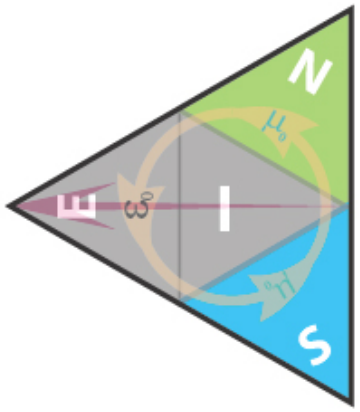
$mv^2 = E = hv^2$

$p^2 = E = mAv^2$



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

$KEM = Mv^2$

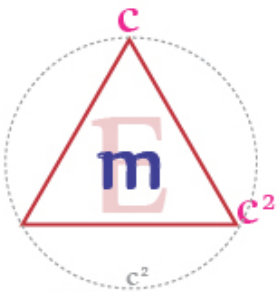


EM energies expressed externally on the fascia of particle's
Tetryonic geometry is the physical property known as Charge

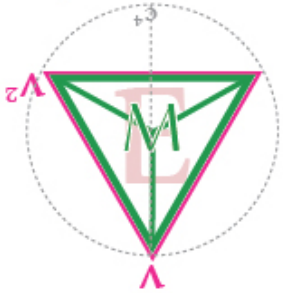
EM energies in free space are viewed as either
a Kinetic energy field with a Magnetic moment
or
a neutral charge ElectroMagnetic field [Photon]

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

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

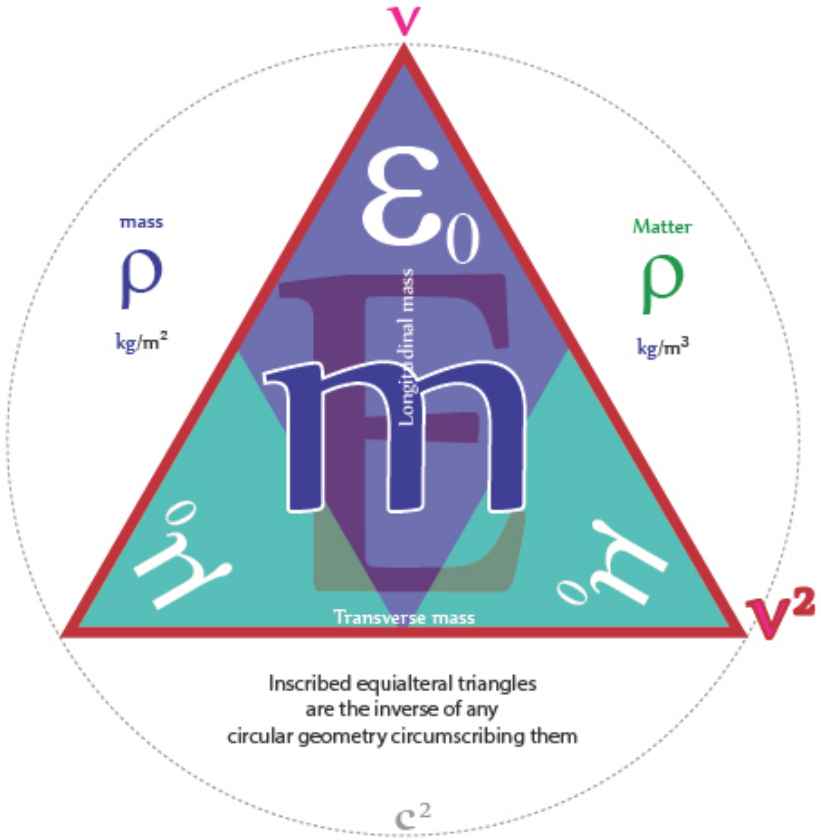


2D fields propagate at c
3D Matter moves at v



inertial mass

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



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

mass must be distinguished from Matter in physics,
because Matter is a poorly-defined concept,
and although all types of agreed-upon Matter exhibit mass,
it is also the case that there many types of Energy which are not Matter,
such as potential energy, kinetic energies and electromagnetic radiation (photons)

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

$$n\pi\left[\left[\varepsilon_0\mu_0\right].\left[mAv^2\right]\right]$$

EM field: $\frac{1}{c^2}$ Energy: E

EM mass is a Scalar equivalent of Energy per c^2

Thus, all Matter has the 2D scalar property of mass-Energy,
but 3D Matter is not a property of EM mass

mass

$$\rho$$

EM mass is a measure of
Energy density per second

$$\frac{mv^2}{c^2} \quad \boxed{\frac{mAv^2}{c^2}} \quad \frac{hv^2}{c^2}$$

per unit of time

EM mass (as a form of Energy)
is subject to
Lorentz corrections

velocity QAM quanta

$$\frac{mv^2}{c^2} = \frac{mAv^2}{c^2}$$

per unit of time

Gravitational Matter

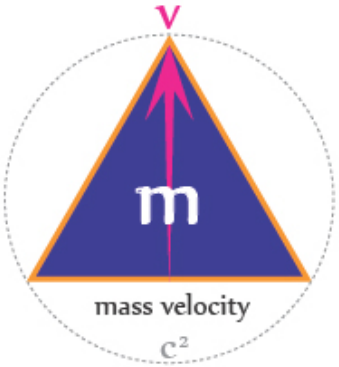
$$g = G\frac{M}{r^2}$$

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

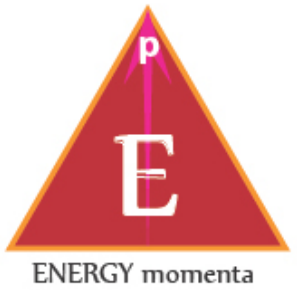
Using this concept, EM mass is a property of all Energy, and Energy is a property of all EM mass, and the two properties are connected by a constant.

Using Tetryonic geometry it can be shown that the constant is 'Velocity' thus unifying Classical mechanics and Relativisic mechanics



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

Newtonian mass

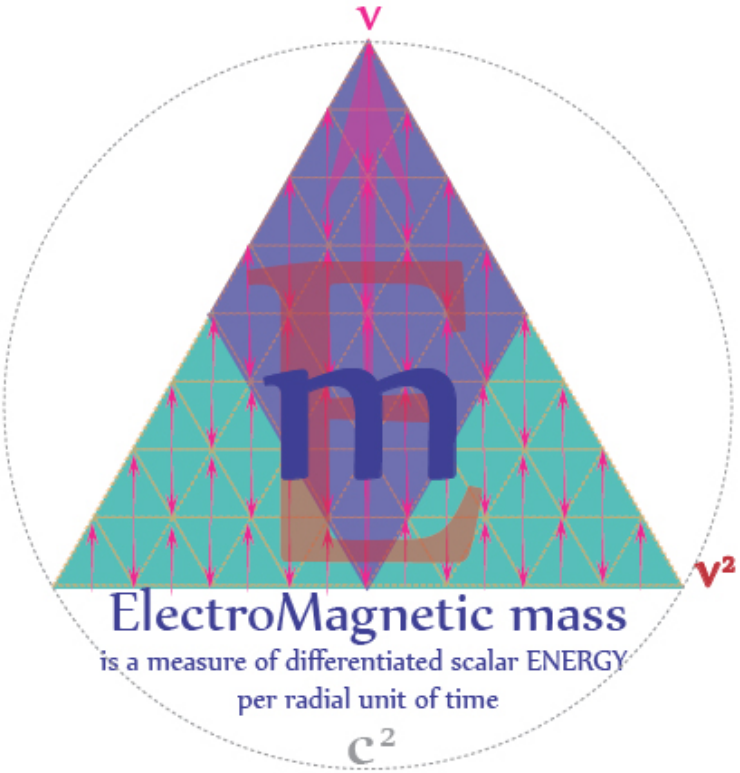


Inertial mass

is a measure of the ENERGY-momenta

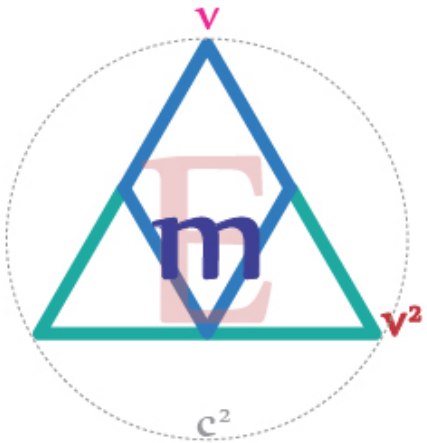
$$m = \frac{E}{v^2}$$

Classical mass



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

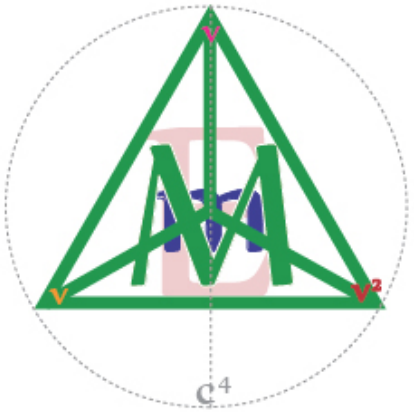
Relativistic mass



The EM mass-ENERGY density of KEM fields is related to Matter through its velocity

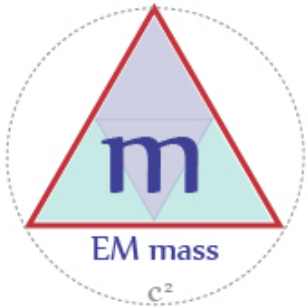
Relativity shows that rest mass and rest energy are essentially equivalent, via the well-known relationship (E=mc2)

2D mass-ENERGY is NOT 3D Matter



The EM mass-ENERGY density of Matter is related through the natural velocity of Energy

EM mass-Energy-Matter



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

momenta - geometry

Tetryonic Matter — EM Field — Planck quanta

$$T\pi\left[\left[\varepsilon_0\mu_0\right].\left[mAv^2\right]\right]$$

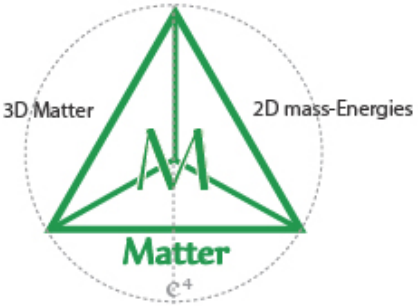
3D geometry

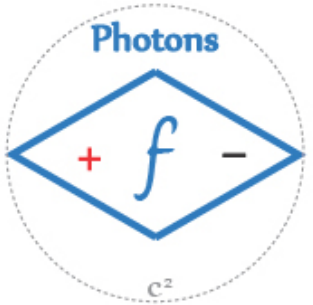
ElectroMagnetic 2D mass velocity

Planck quanta

$$\left[mAv\right]^2$$

mass velocity





$$1\pi\left[\left[\varepsilon_0\mu_0\right].\left[mAv^2\right]\right]$$

ODD quanta

$$4n\pi\left[\left[\varepsilon_0\mu_0\right].\left[mAv^2\right]\right]$$

TETRYONS

$$2\pi\left[\left[\varepsilon_0\mu_0\right].\left[mAv^2\right]\right]$$

EVEN quanta

EM mass-Energy momenta

Scalar Energy per quanta

7.376238376 e-51 kg

m

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

mass-Energy

$\left[\frac{mA}{s}\right]$

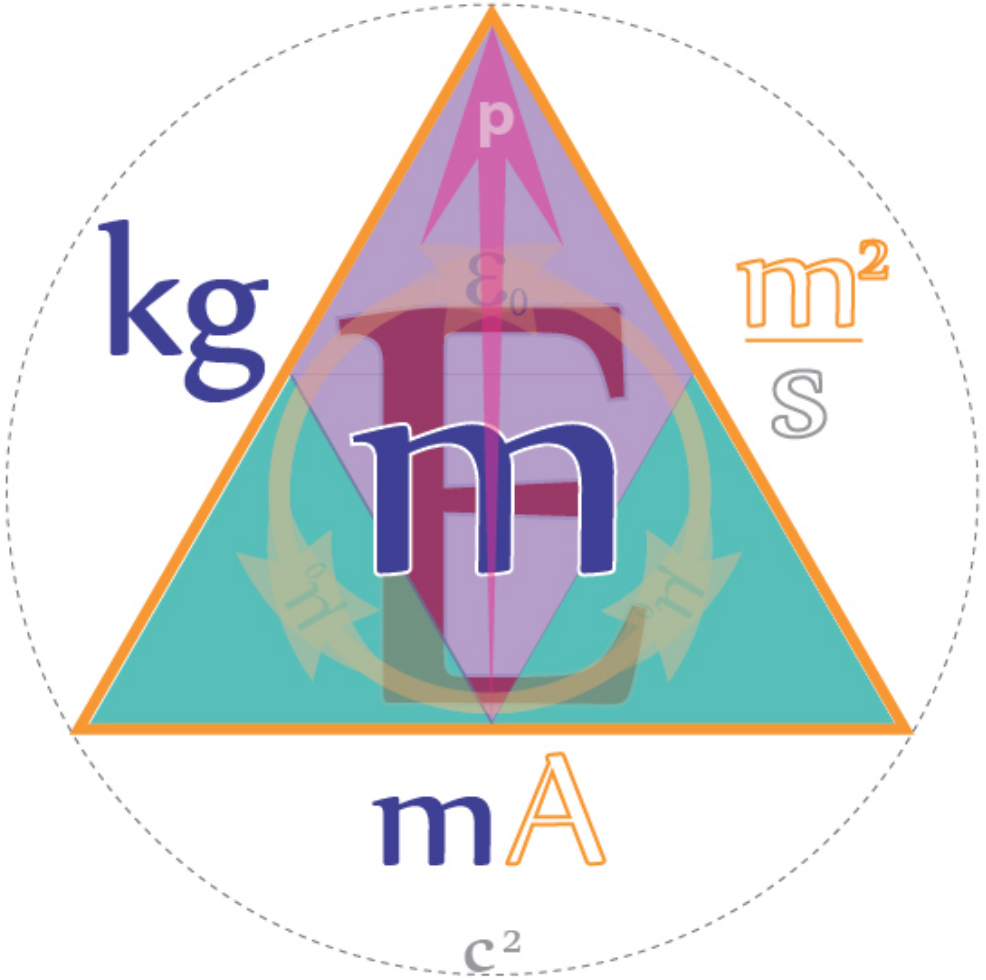
E

6.62943244 e-34 J

Planck per second

Planck's Constant

is the 'quantum of Action'



$6.62943244 \times 10^{-34}$ J.s

mass momenta

Scalar momenta per charge

0.0012 m2/s

qAm

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

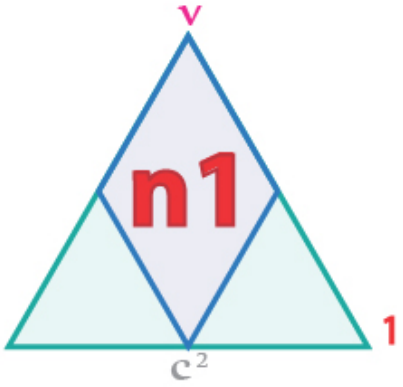
momenta-Charge

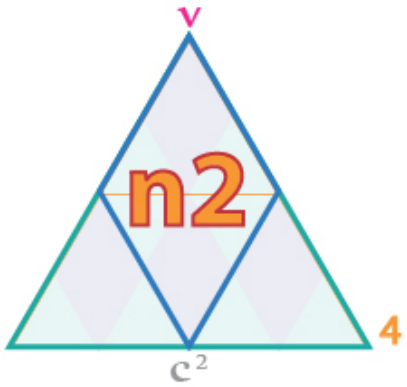
$\left[\frac{A}{c^2}\right]$

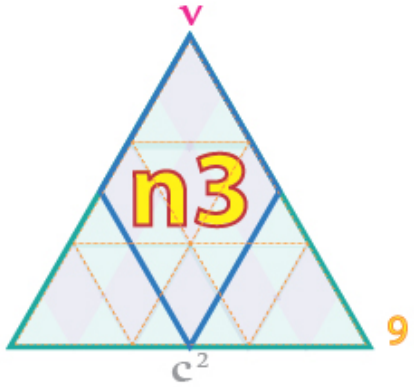
s

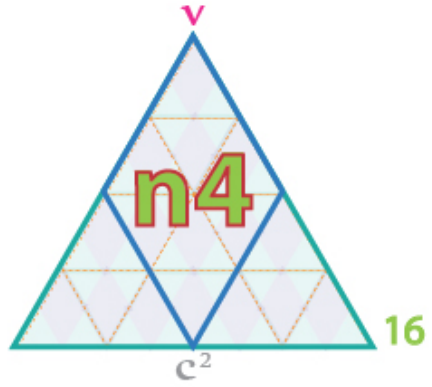
1.33570456e-20 C

QAM per quanta









ρ

2D
EM mass-Energy
per square metre

mass

m

kg/m²

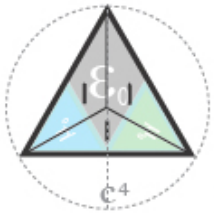
ρ

Energy density
per second

$T\pi\left[\left[\varepsilon_0\mu_0\right].\left[mAv^2\right]\right]$

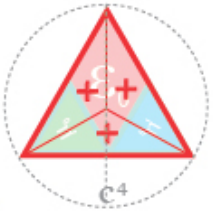
EM Field — Planck quanta

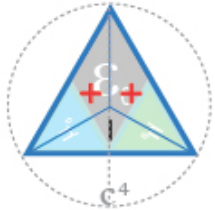
3D Matter — ElectroMagnetic — 2D mass — velocity



ρ

3D
EM mass-Energy
per spherical metre

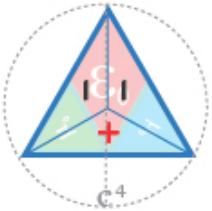


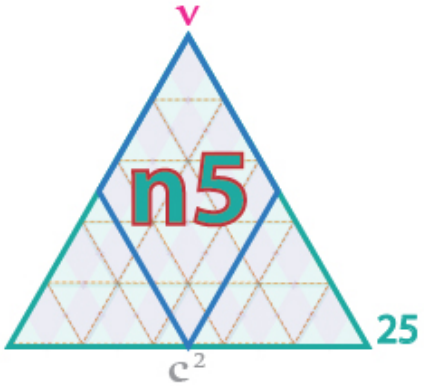


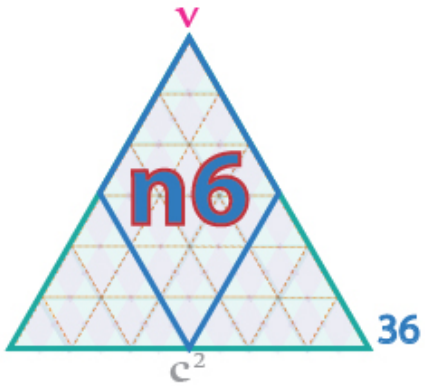
Matter

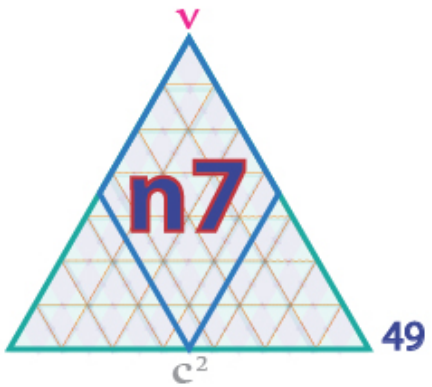
M

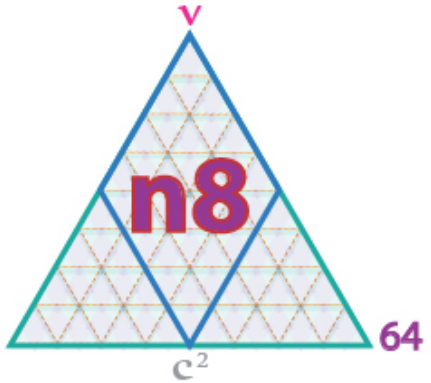
kg/m³











Zero Point Fields [ZPFs]

ZPFs are Quantum harmonic tank circuits
(Short-circuited 'IDEAL Inductors' with energy)
ZPFs charges do NOT oscillate
[The nett Energy geometry determines Charge]

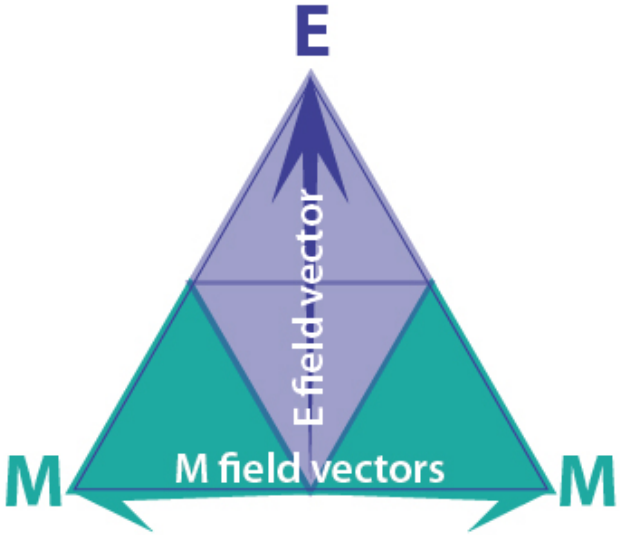
IDEAL QUANTUM INDUCTORS
(equilateral triangle Energy geometry)

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

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

h
Positive Charge ZPF
Nett positive angular momenta

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

h
Negative Charge ZPF
Nett negative angular momentum

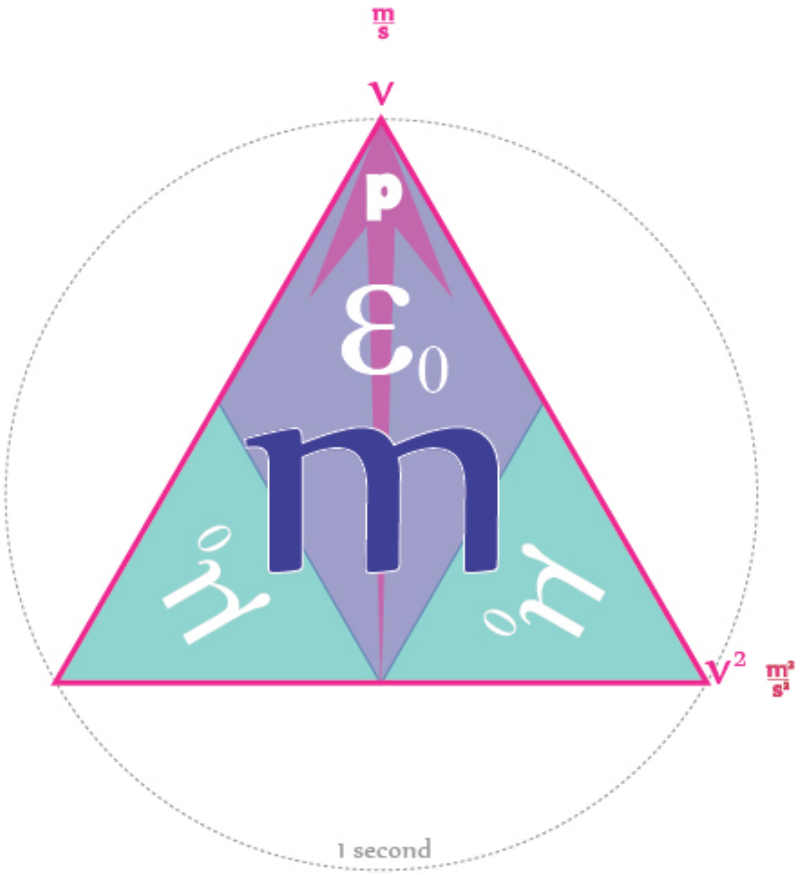
As localised energy quanta increases
(number of ZPFs per time unit)
the ZPF geometry remains the same

Tetryonic Angular Momentum

$mv^2 = E$

is the area covered by charged Tetryonic
mass-Energy quanta per second

$E = hv^2$



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

E

6.629432351 e-34 J

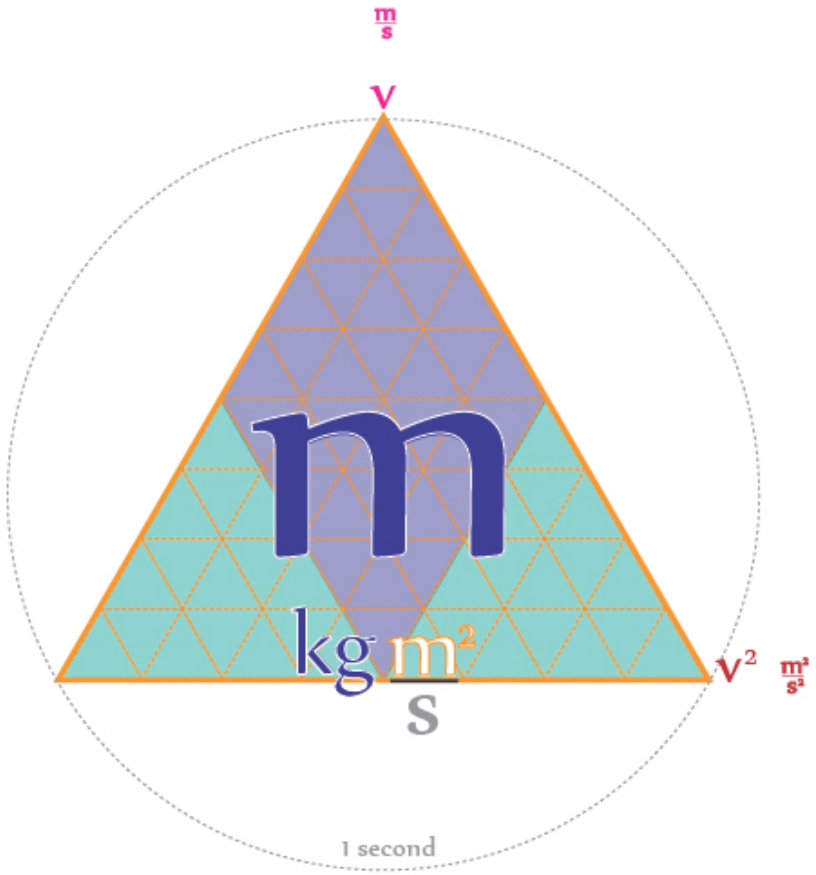
Planck quanta

$[mAv^2]$

mass velocity

7.376238376 e-51 kg

m



mA

mass QAM

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

Normally percieved as velocity in a circular motion
Angular Momentum in Tetryonics is actually

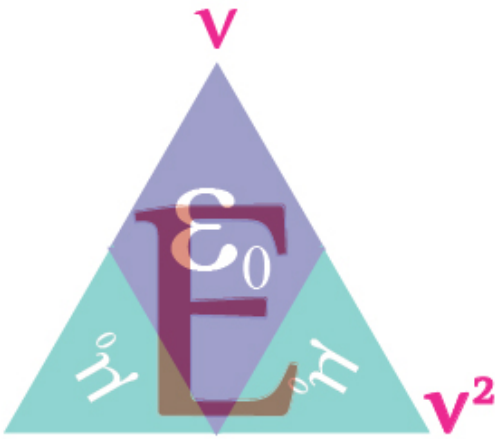
Triangular guassian flux geometry per second
(there is no rotational component)

h

Planck's Constant

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

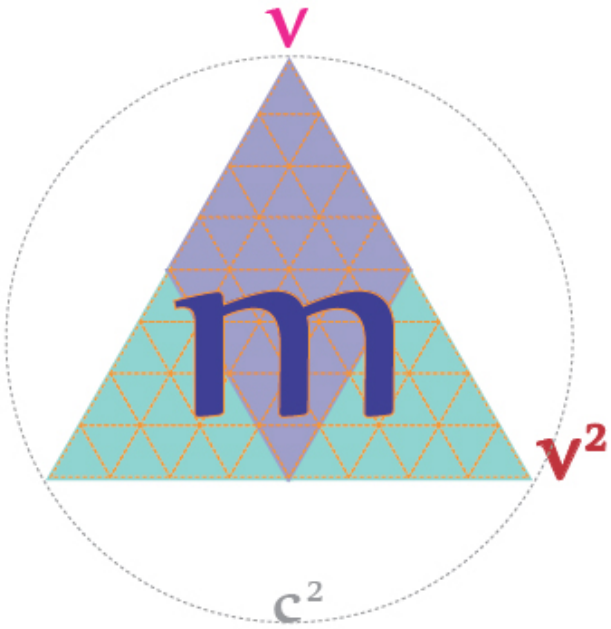
Charged masses



Amperes

Coulombs per second $\frac{C}{s} \approx \frac{kg}{s} \approx A$ Charge per second

is a measure of EM mass

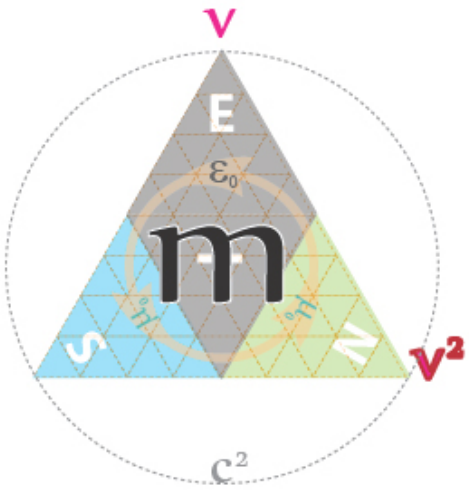


By definition in Tetryonics the
mechanical nett Planck quanta of Energy
in equilateral geometries [Charge] per second
provides the quantum basis for

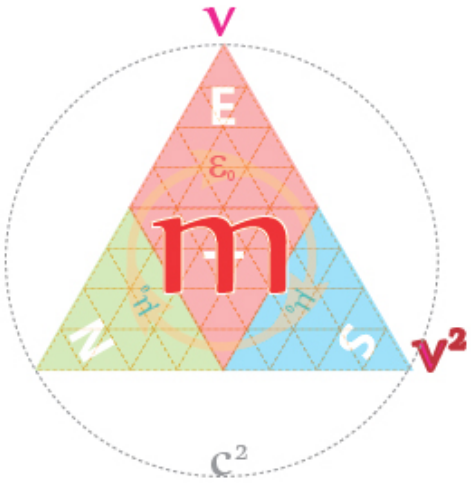
$$kg\ \frac{m^2}{s}\ \frac{1}{s}\ \frac{s^2}{m^2}$$

charged EM mass

Energy density
produces EM mass



Quantised Angular Momentum
produces charged EM fields

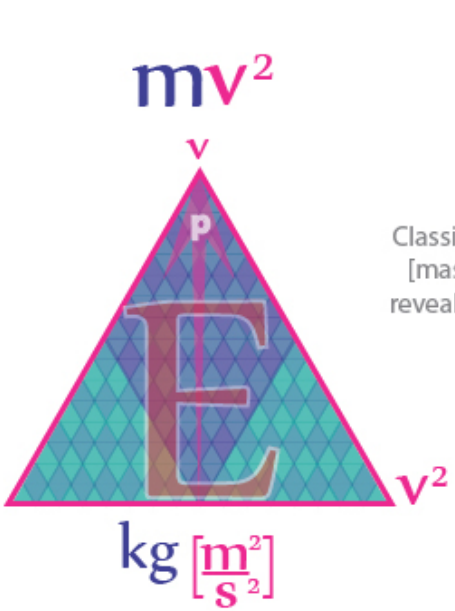


Coulombs $C \approx \frac{s}{kg} \approx As$ Charge

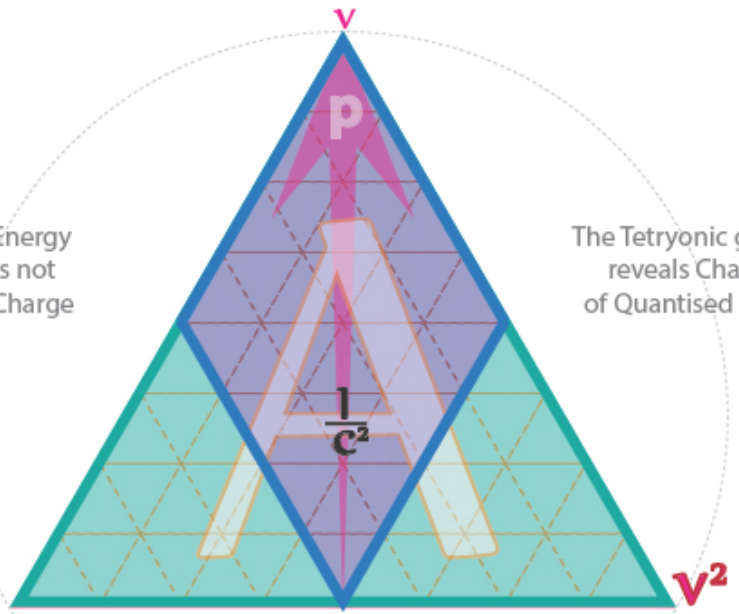
**Charge, throught its energy interactions,
creates the geometric scaffolding for ALL
3D EM mass-Energy-Matter geometries**

Charged mass geometry

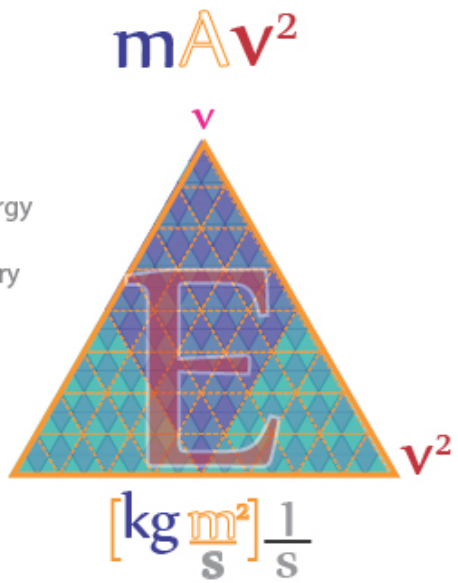
The symmetry of Charge geometries provides a geometric basis
for all EM mass-Energy-Matter particles and physical Forces that we know



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

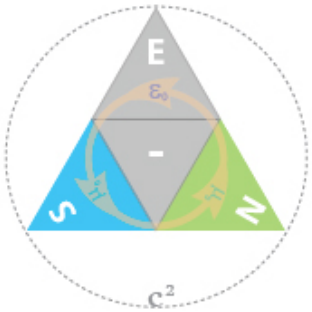


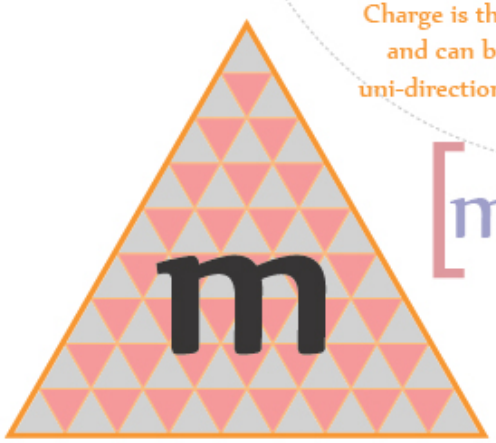
The Tetryonic geometry of Energy
reveals Charge as a product
of Quantised Angular geometry

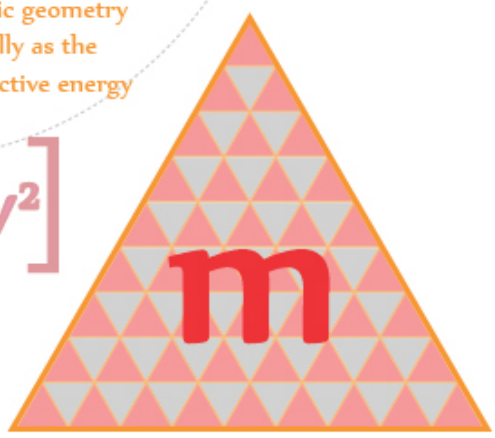


Charge is the result of Tetryonic geometry
and can be modelled classically as the
uni-directional rotation of inductive energy

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

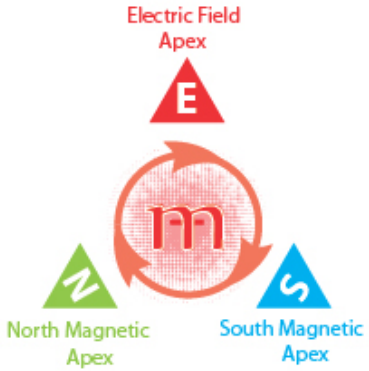


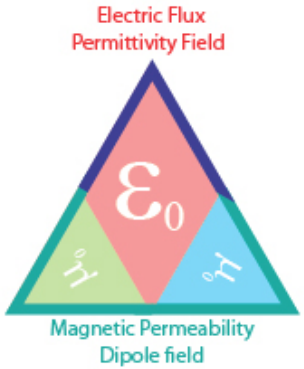




Charge can be viewed as
'The Broken (unbalanced) energy symmetry resulting from
the nett geometry of equilateral EM mass-Energy quanta'

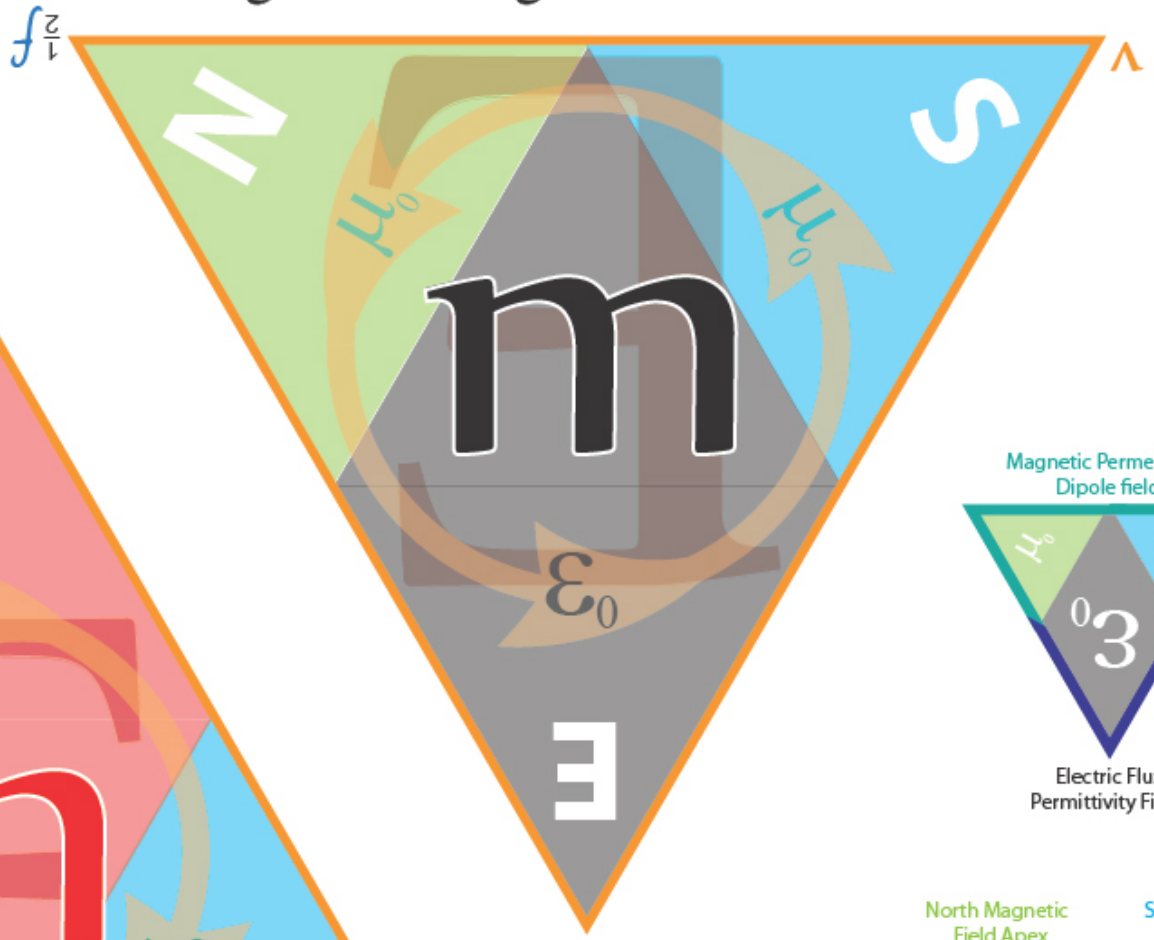
ZPF Charges

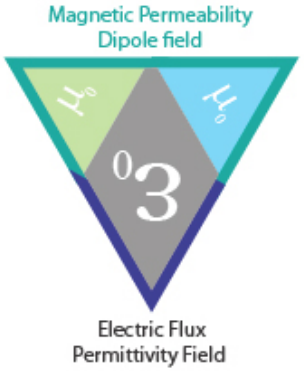


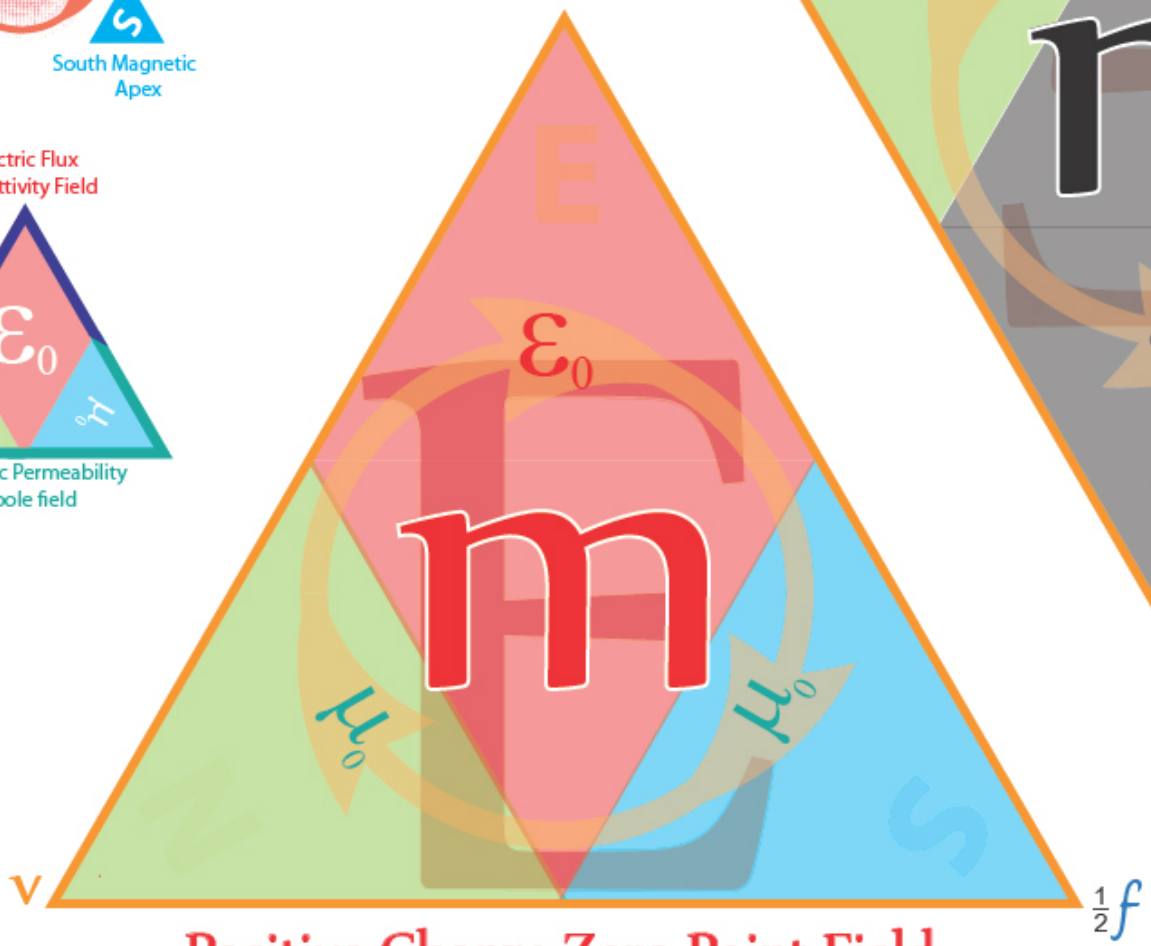


Clasically modelled anti-clockwise energy Flux

Negative Charge Zero Point Field

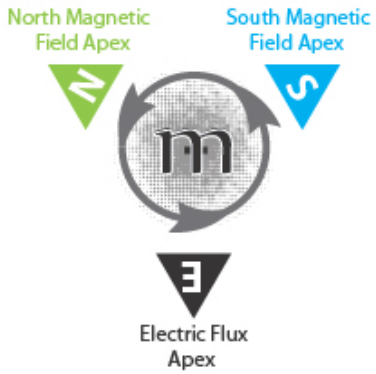






Positive Charge Zero Point Field

Clasically modelled clockwise energy Flux



Elementary and quantum Charges

" All known elementary particles, including quarks, have charges that are integer multiples of 1/3e. "

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 charges of 0, 4 and 8

Further, it can be shown that the "elementary charge"
applies to Fermions and Baryons (12 times quantum charge)
in order to create their geometries

$$T\pi[\pm 1]$$

Opposites attract
Similars repel

Quarks

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

Leptons

e-

Muon	Neutrino	Positron	
Tauon	Tau Neutrino	Tau anti-electron	12

Baryons

-1	0	+1
Negatron	Neutron	Proton

Quantum 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
geometries

Zero Point Fields

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

Quasi-particles

Matter

4	0	4
[4/0]	[2/2]	[0/4]

Tetryons

Quarks

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

Fermions

Leptons

e	νe	νe	e
12	0	0	12
[2/10]	[4/8]	[8/4]	[10/2]

Baryons

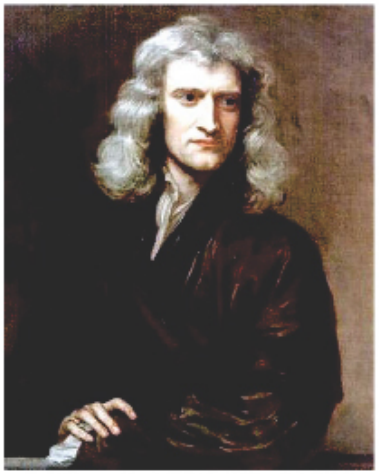
Negatron	Neutron	Proton
12	0	12
[0/4]	[0/4]	[0/4]

Baryons

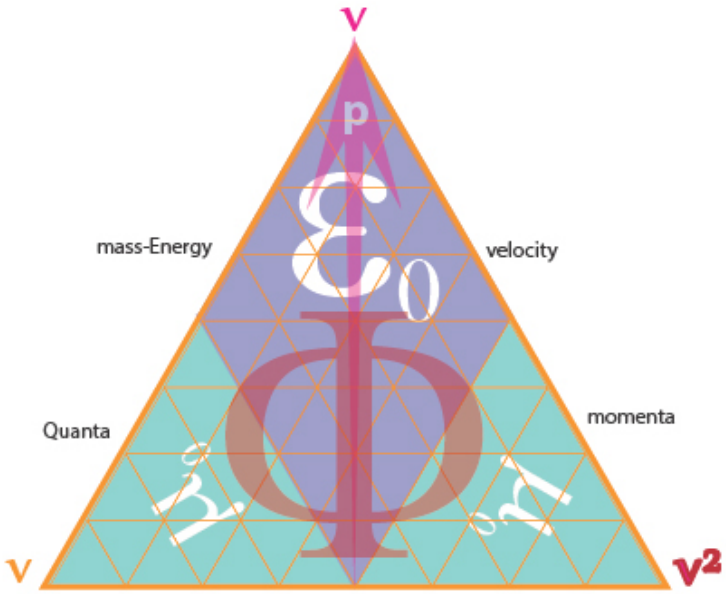
All Charges seek Equilibrium

Inertia

Sir Issac Newton



(25 December 1642 – 20 March 1727)



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

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.

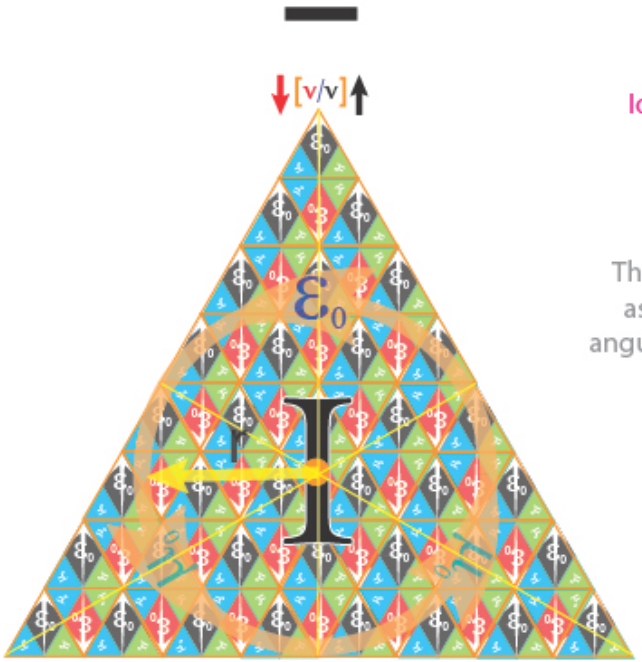
It is proportional to an object's mass.

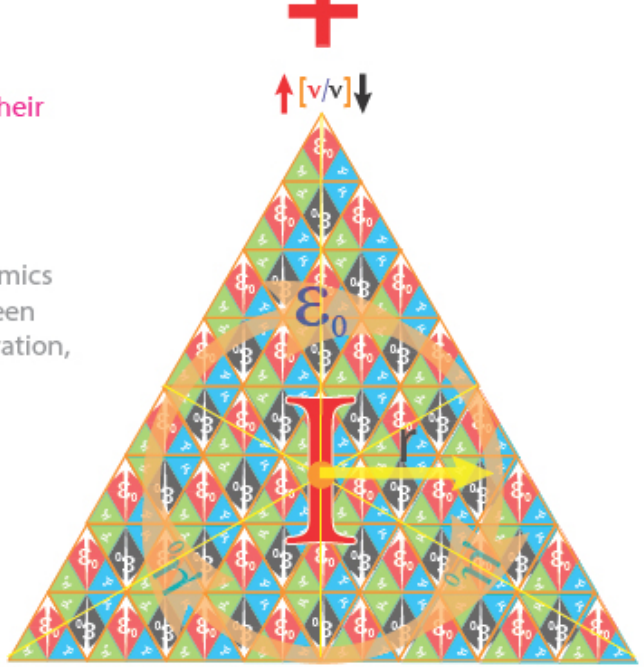
Any changes to velocity
result in changes to Energy-momenta
within its Charge geometries

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

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 Charge [mass-Energy-momenta]
within the geometry of an EM field or body





Planck Quanta

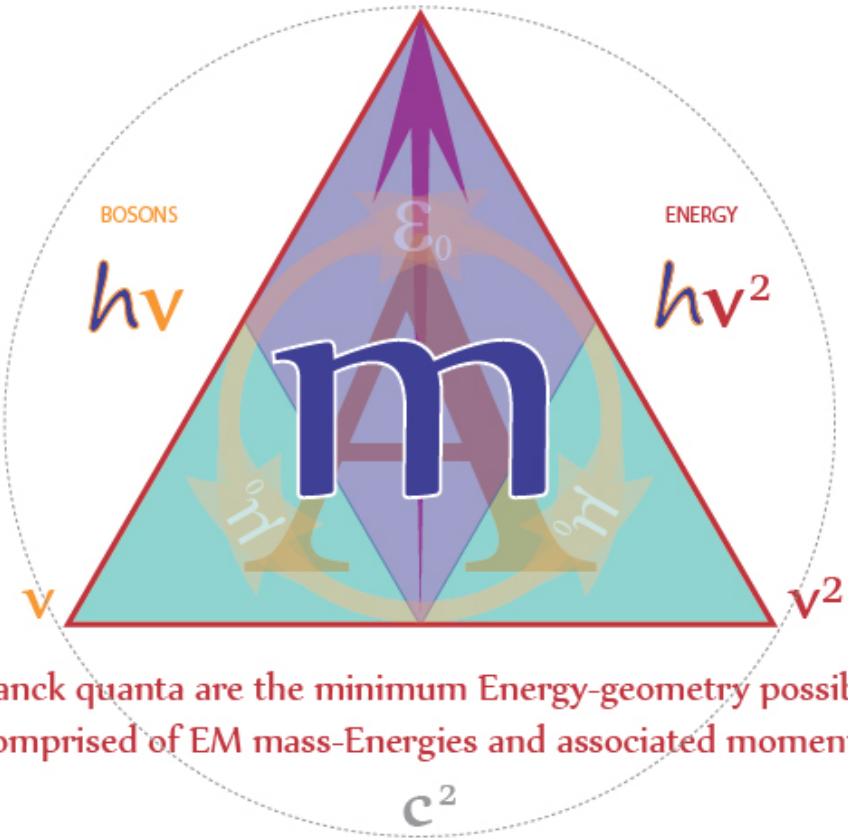
h

Often defined as the "quantum of action"

Planck's Constant

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

The Planck constant (denoted h), also called Planck's constant, is a physical constant reflecting the sizes of quanta in quantum mechanics



Planck quanta are the minimum Energy-geometry possible (comprised of EM mass-Energies and associated momenta)

c^2

$h\nu$

$mA\nu^2$

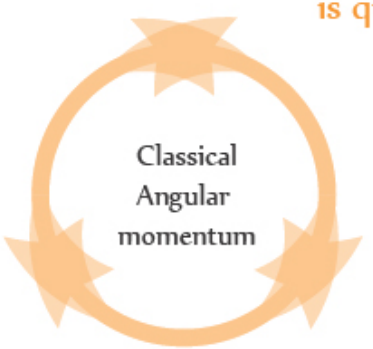
Planck's Constant x quanta per second

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

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

Angular Momentum is quantised



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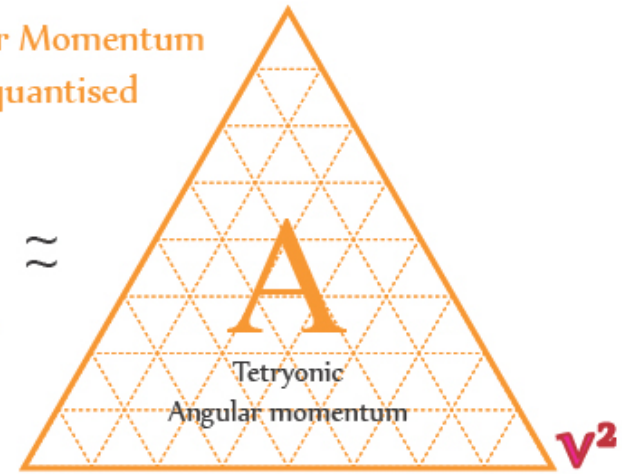
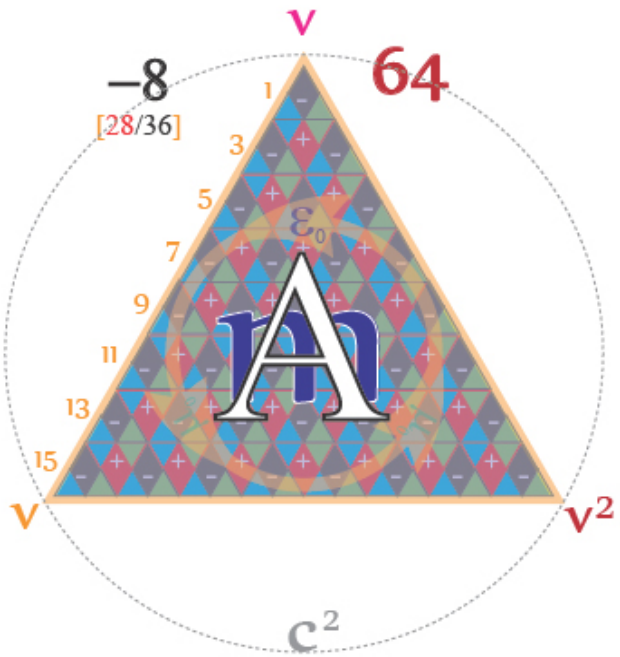


Photons have neutral quanta geometry

Planck Number

$E=n.h\nu$



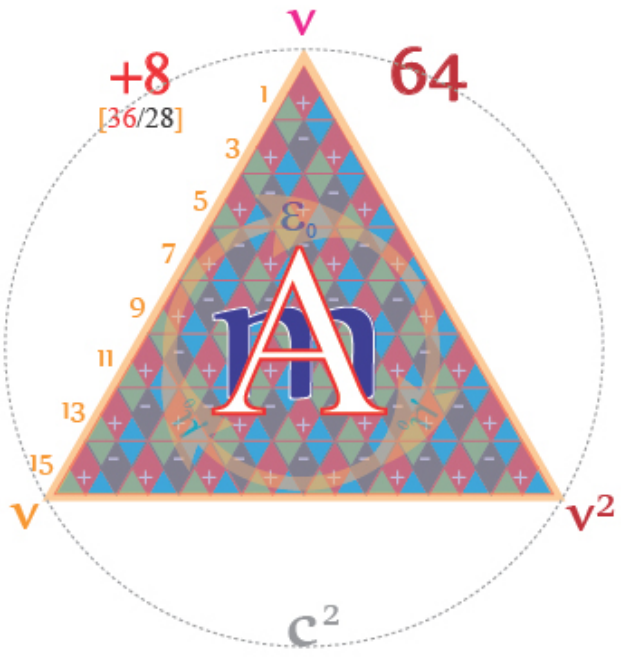
Nett negative EM mass-Energy

hν best represents tranverse Bosons

Max Planck

(April 23, 1858 – October 4, 1947)

hf best represents longitudinal Photons



Nett positive EM mass-Energy

$1e19\nu = \hbar = 5e18f$

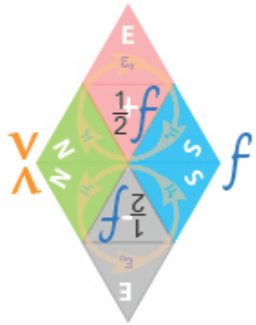
quantum number

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

$$h = 6.626\ 068\ 96(33) \times 10^{-34}\ \mathrm{J\ s} = 4.135\ 667\ 33(10) \times 10^{-15}\ \mathrm{eV\ s}$$

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]

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



BOSONS

$$1\pi\ \text{Boson}\left[\left[\varepsilon_0\mu_0\right].\left[m\mathbb{A}v^2\right]\right]$$

EM Field: ElectroMagnetic; Planck quanta: mass, velocity

Equating number of quanta
is the source of a number

$h\nu \neq hf$

Planck Einstein

to photon frequency
of quantum misconceptions

$$2\pi\ \text{Photon}\left[\left[\varepsilon_0\mu_0\right].\left[m\mathbb{A}v^2\right]\right]$$

EM Field: ElectroMagnetic; Planck quanta: mass, velocity

PHOTONS

Quantum Inductors

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

- ZPF

A Negative ZPF can
be viewed as
a Quantum ideal inductor
with an internalised
energy flux flow that is the
opposite of a Positive ZPF

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

Its energy flux flow direction is relative
to the observer's view or direction of measurement

Charge polarity is opposite faces
of the same quantum coin

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

+ ZPF

A Positive ZPF can
be viewed as
a Quantum ideal inductor
with an internalised
energy flux flow that is the
opposite of a Negative ZPF

Counter-Clockwise
Current Flow

NEGATIVE
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 Inducitve circuit
is a SINGLE charge tri-state inductive energy loop

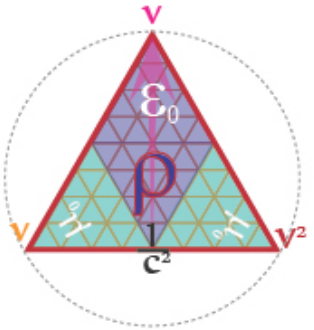
It does not oscillate energy between two opposing charges
it 'circulates' its energy between 3 differing types of energy
storing Electric energy in its E field, and Magnetic energy in its B field

The direction of circulation is relative
to the direction of observation

Clockwise
current flow

POSITIVE
Quantum L circuit
Quantum Inductive circuit

Quantum Inductances and Levels



1 sec Energy measurements form v^2 energy geometries

Quantum Inductors

Quantum Geometries

[ZPFs]

[Bosons]

1

3

5

[1]
Single Quantum Inductor

[1+2]
Coupled
Quantum Oscillator

1^2

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

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

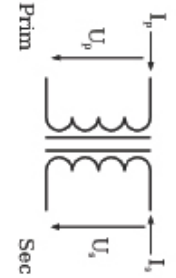
Series Inductance

Series Inductance

All Quantum Levels have Series Inductive bases

Quantum energy levels can be viewed as various combinations of:

Coupled Inductances



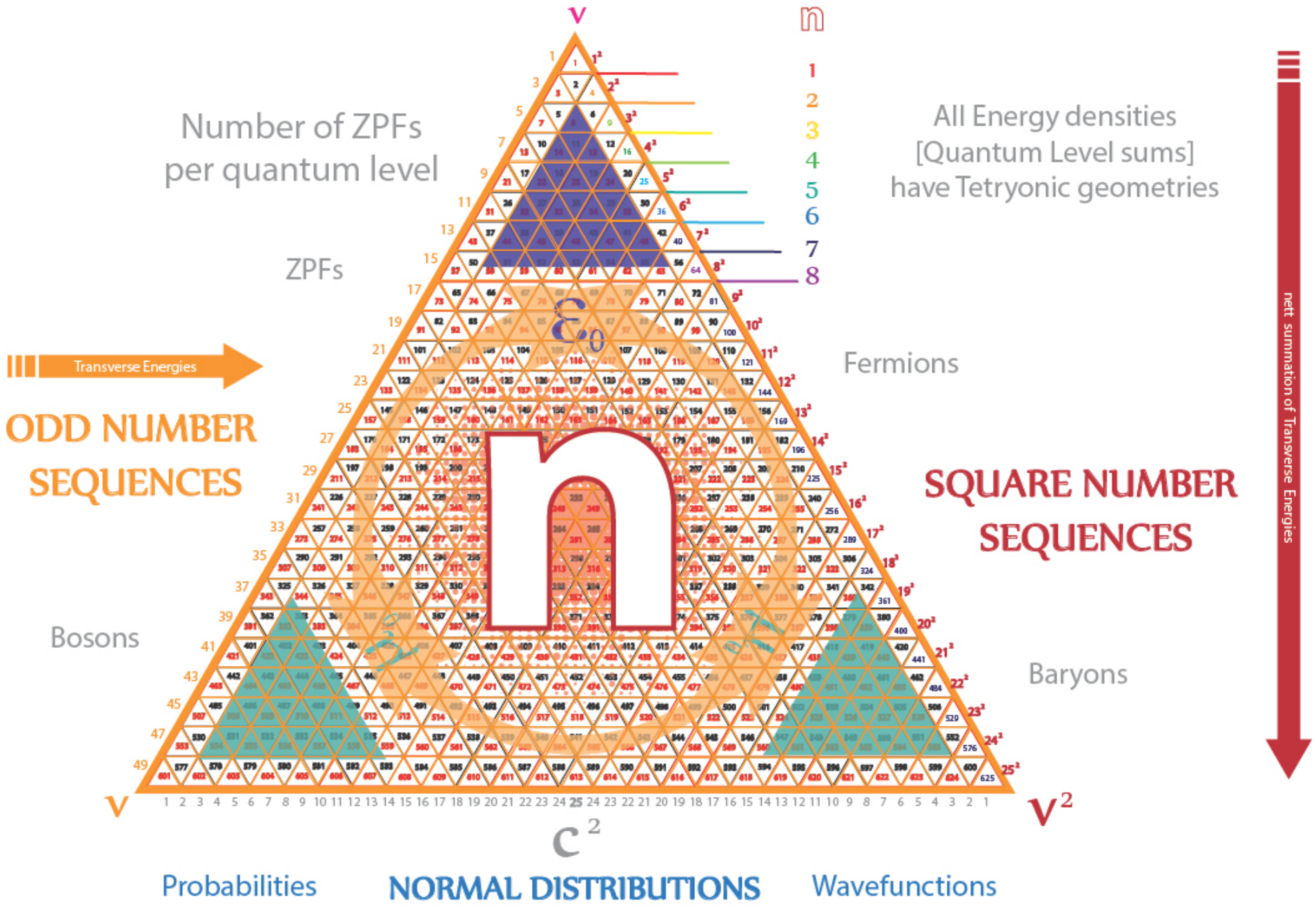
Parallel Inductances

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

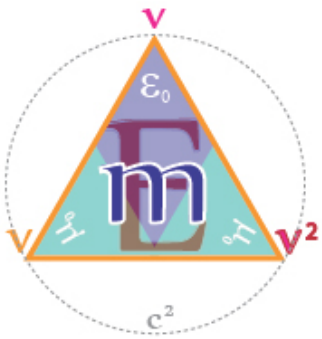
Series Inductances

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

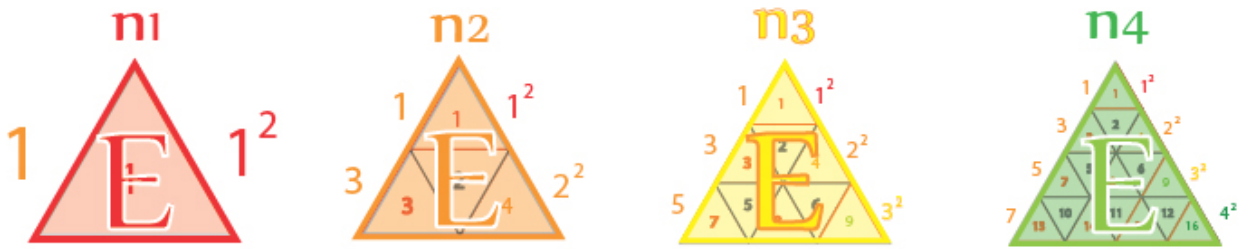
The Golden Triangle



Quantum Energy Levels



Individual equilateral Planck quanta combine to form larger EM mass-Energy geometries with Charge being determined by the nett Positive and Negative quanta



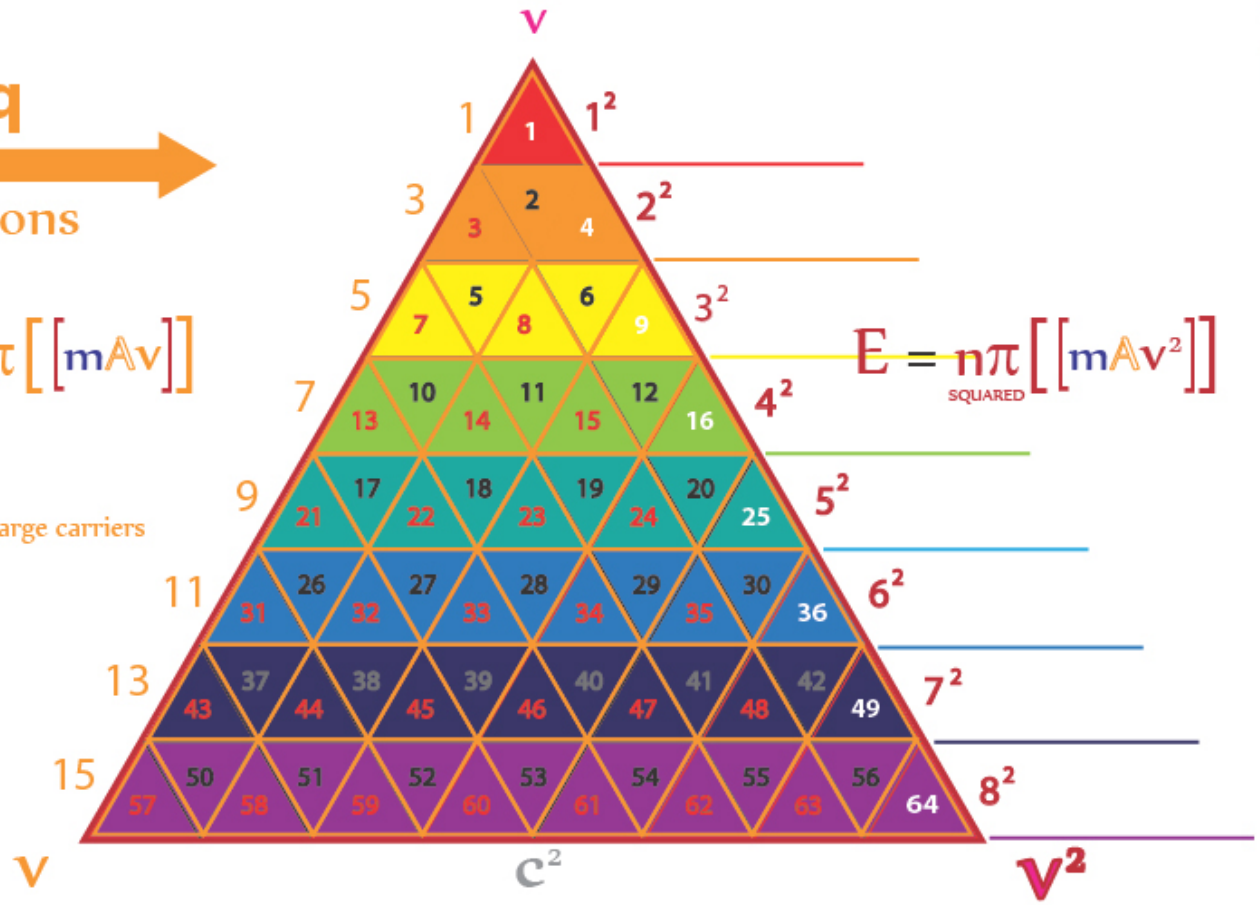
Within any measured region of Space-Time the energy density of a region can increase or decrease creating the familiar Squared Quantum Energy levels

q

Bosons

$$E = n\pi_{ODD}[[mAv]]$$

Bosons are Charge carriers



$$E = n\pi_{SQUARED}[[mAv^2]]$$

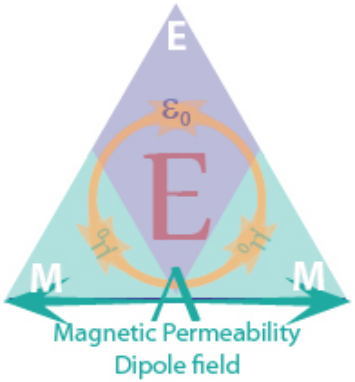
Energy

n

1 2 3 4 5 6 7 8

Magnetic Vectors

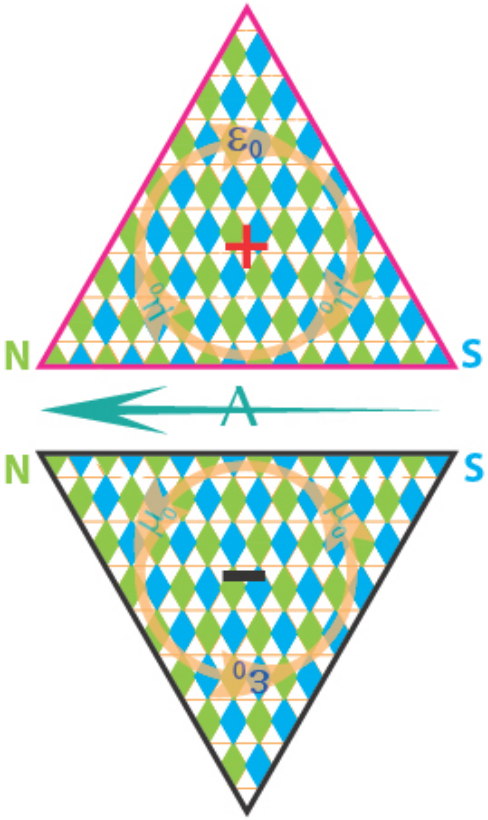
Intrinsic Magnetic vectors
are transverse to E fields



External Magnetic fields
are termed B fields

Magnetic vectors are reflective of
the direction of classically defined
Quantised Angular Momentum
contained in EM fields

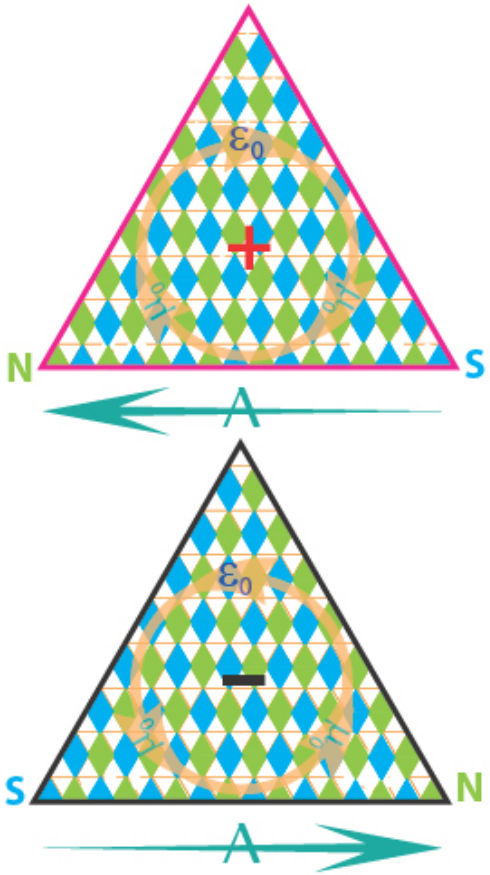
Opposite charges moving in opposing directions
produce Magnetic vectors of the same direction



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

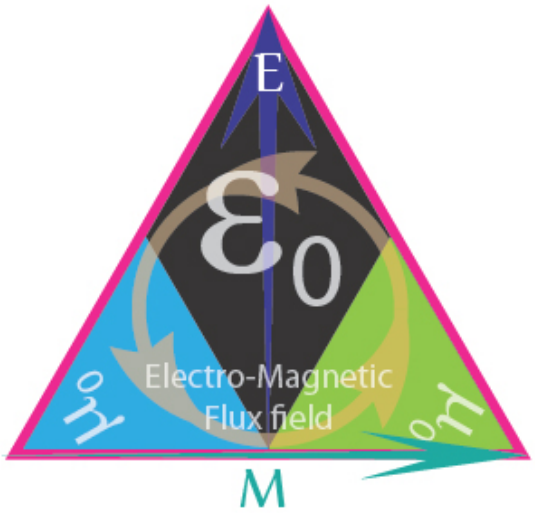
Within a Magnetic dipole
Magnetic Vector A
energy 'flows' South to North

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



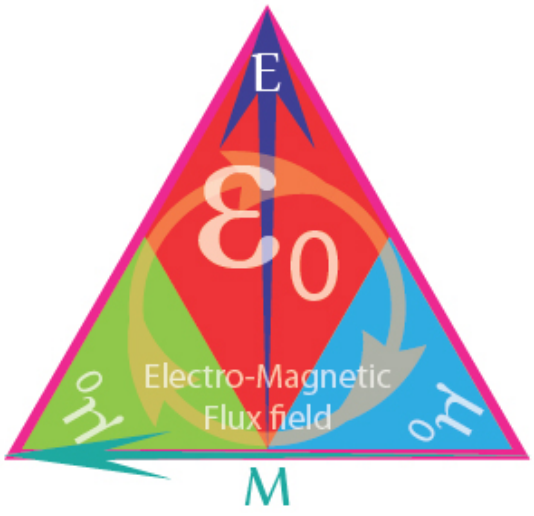
Opposite charges moving in the same direction
produce Magnetic vectors with opposing directions

Charge Fields

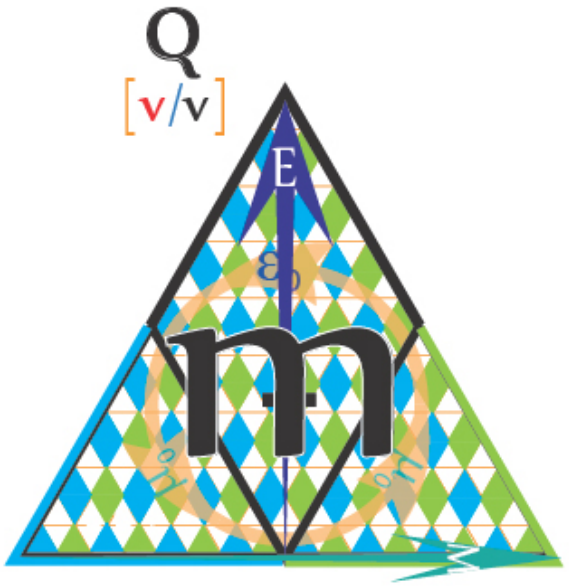


EM energy fluxes in a Negative ZPF
are classically modelled as Counter-clockwise
(from North to South)

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



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



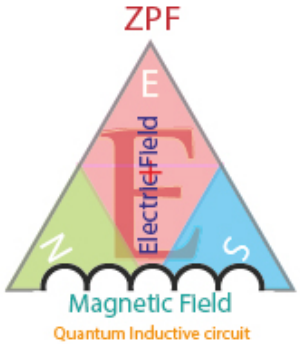
All classical Planck Energy fluxes
are models for nett Tetryonic
Quantum Angular Momentum
geometry

Polarised
Electric and Magnetic fluxes
in ElectroMagnetic fields arise from
intrinsic Quantised Angular Momentum

EM fields

are the combined Electric and Magnetic fields generated by the Energy density in a region of free space

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



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

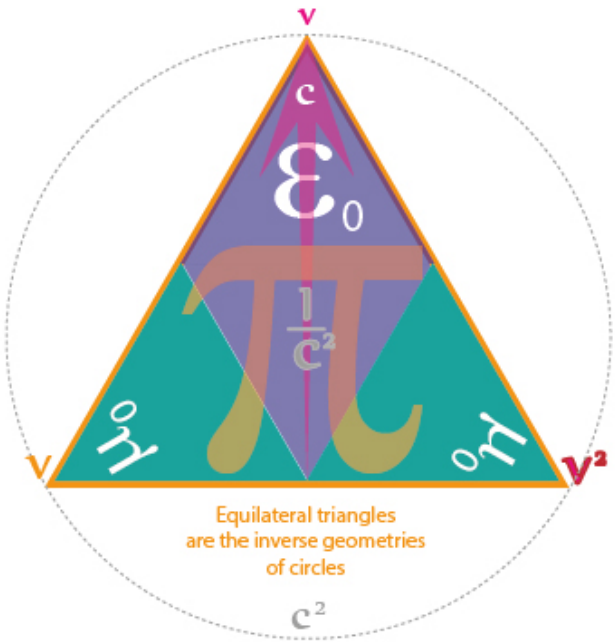
Celeritas = 299,792,458 $\frac{m}{s}$

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

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	$n\pi$	$[\varepsilon_0\mu_0]$	$[mAv^2]$
mass	= Charged	EM field	Energy density

Electric Constant

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

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

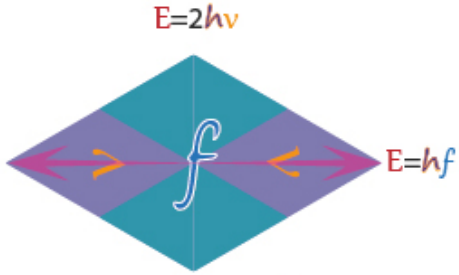
The permittivity of empty space, equal to 1 in centimeter-gram-second electrostatic units and numerically, to 8.854 × 10-12 farad per meter in International System units, where c is the speed of light in meters per second. Symbolized ε0.

Magnetic Constant

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

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

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).



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

The Energy-momenta of ZPFs form natural Poynting vectors

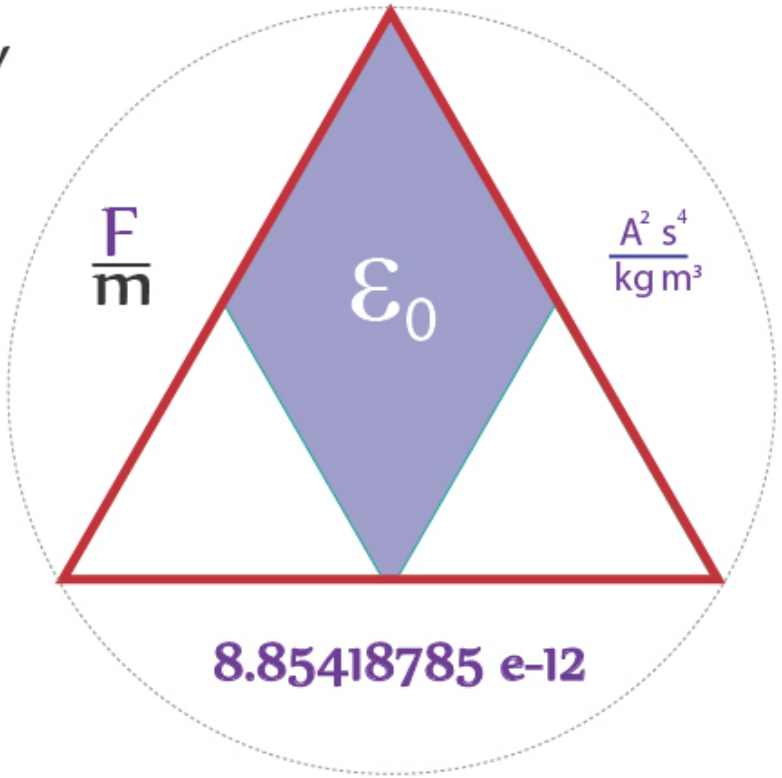
EM field Permittivity

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.

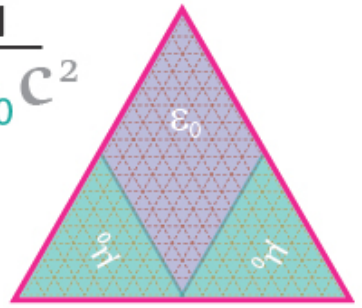
The name Vacuum Permittivty is a misnomer and should be replaced with the correct term EM field Permittivity

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

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



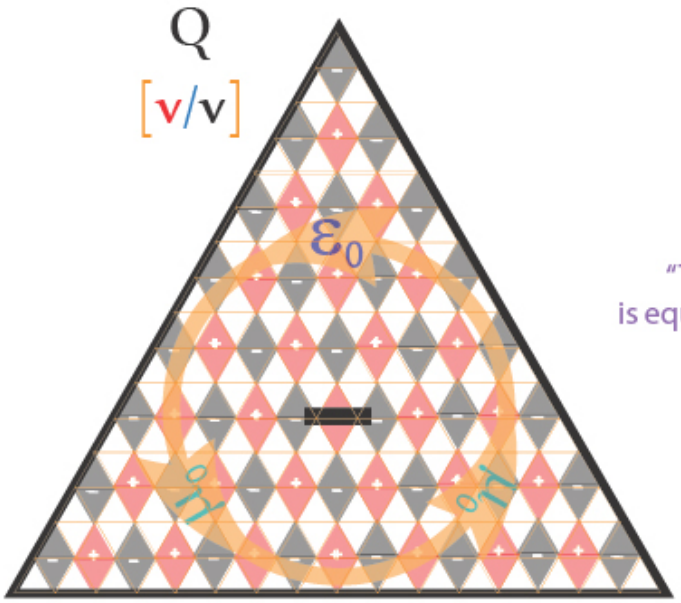
$$\varepsilon_0 = \frac{1}{\mu_0 c^2}$$



"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.



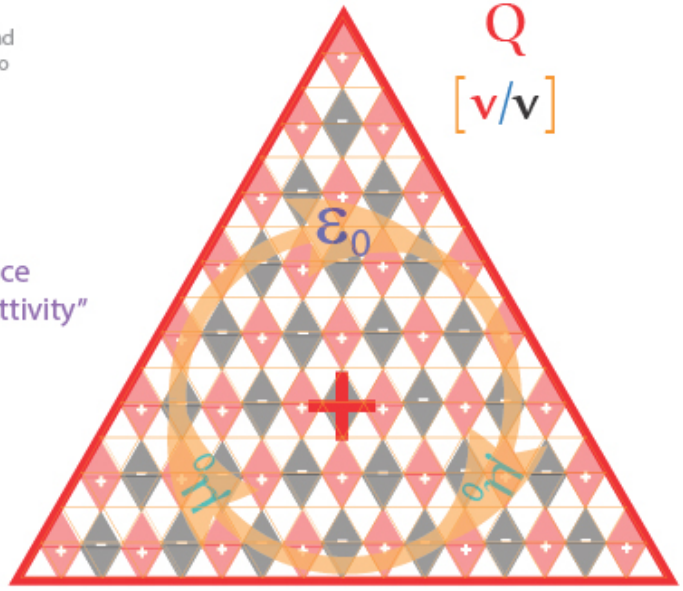
Negative Charge Electric Field

Gauss' Law:

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

applies equally to any geometry chosen to tessellate a surface area

Superpostioned E fields gives rise to Coulomb Forces

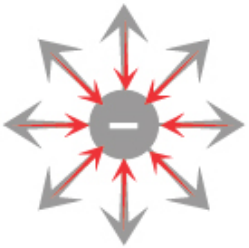


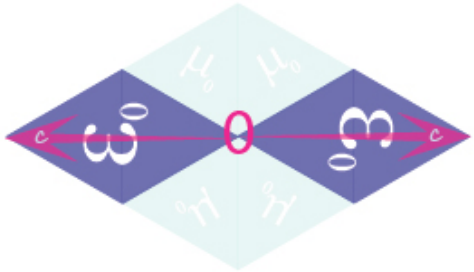
Positive Charge Electric Field

Electric permittivity Fields

Polar view

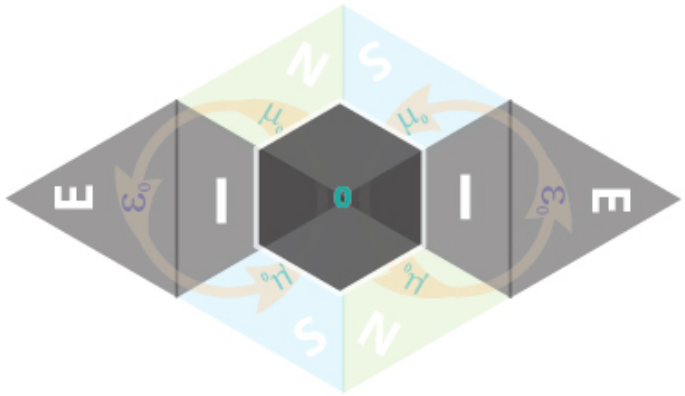
Negative





Polar view

Positive

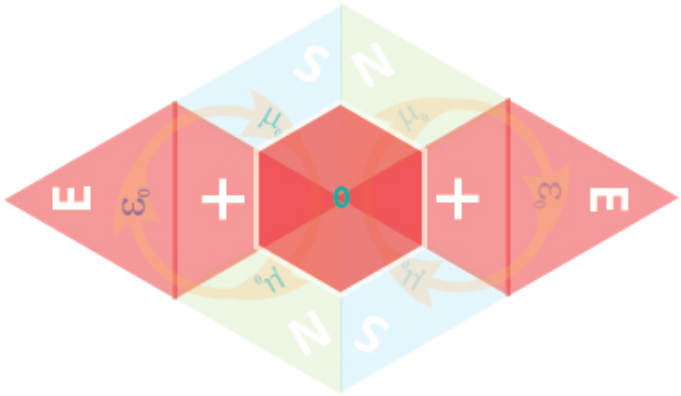


Negative externalised Planck quanta
(Counter-Clockwise Energy fluxs)

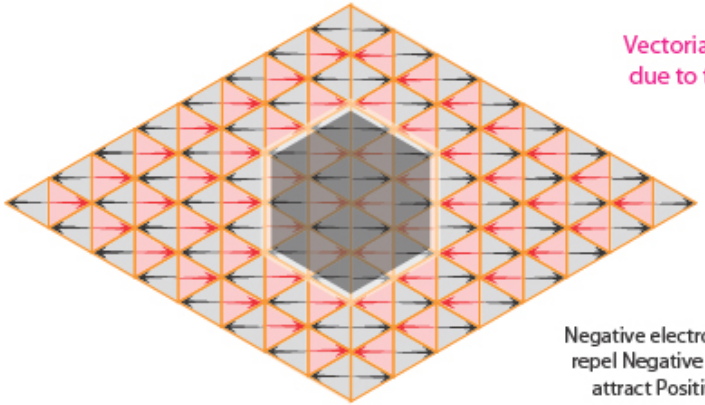
Coupled same charge ZPFs and
Electrostatic Particles have
neutralised Magnetic fields

In Electrostatics unilateral E fields
are the dominant mechanism
for particle interactions

Electrostatic Particles
in motion have Kinetic energy
resulting in Magnetic moments

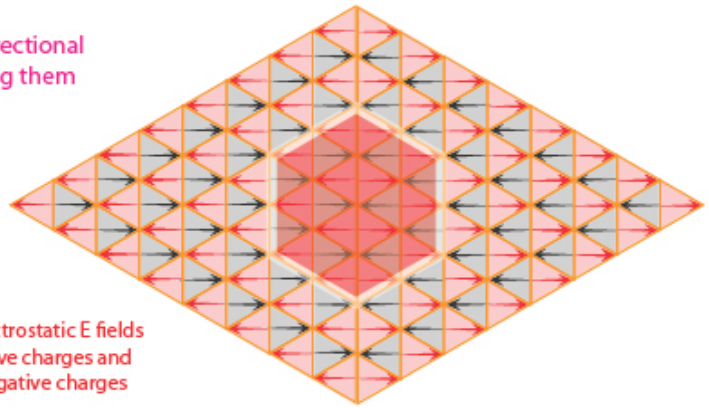


Positive externalised Planck quanta
(Clockwise Energy fluxs)



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

Opposites Attract
Similars Repel



Negative electrostatic E fields
repel Negative charges and
attract Positive charges

Positive electrostatic E fields
repel Positive charges and
attract Negative charges

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

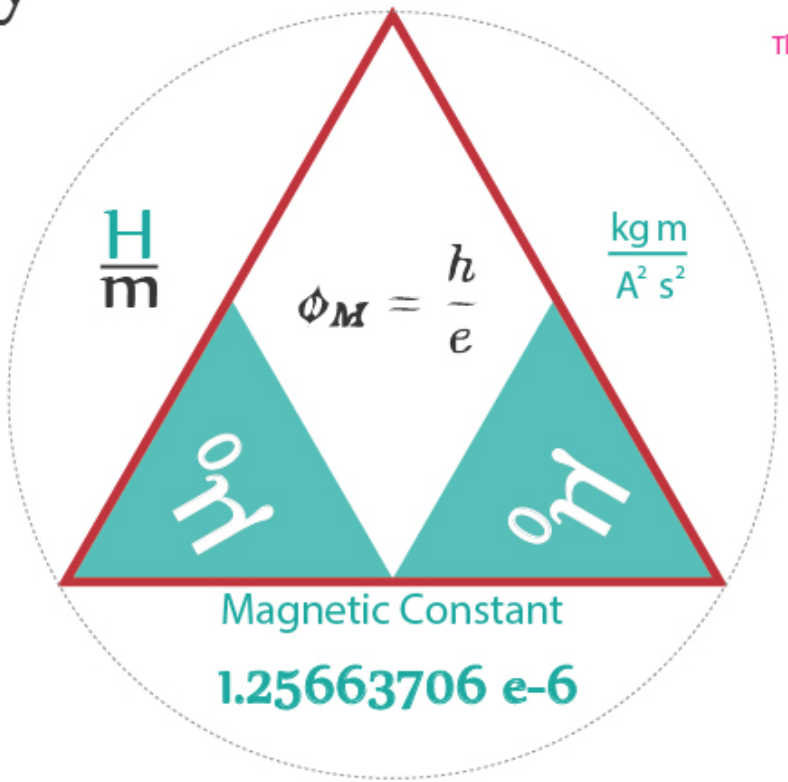
The permeability of free space,
also called absolute permeability.

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.

$$B=\mu_0 H$$

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



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).

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

Negative Magnetic Moment

There are

NO magnetic monopoles

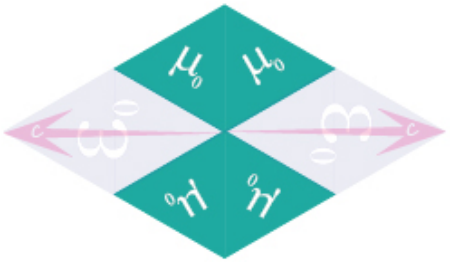
[not under any condition]

Positive Magnetic Moment

Magnetic permeability fields

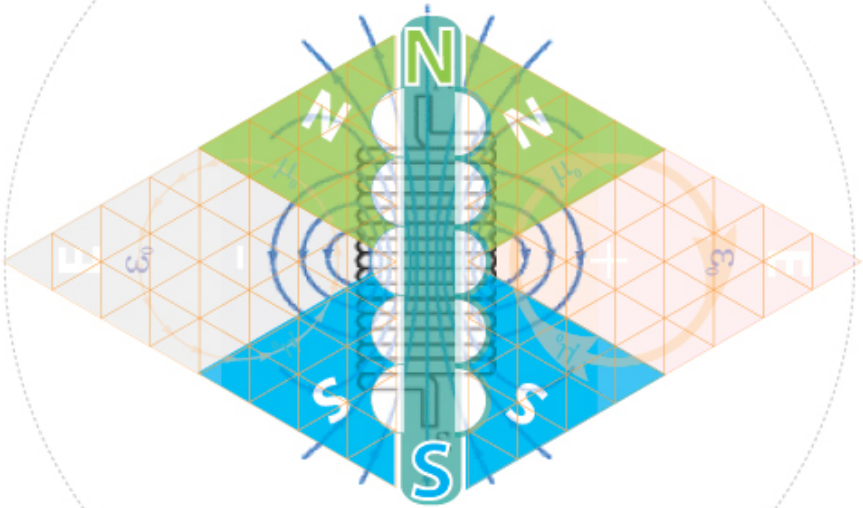
$$\varepsilon_0 \mu_0 = \frac{1}{c^2}$$

Coupled opposite charge
EM fields produce
Magnetic dipole fields



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

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

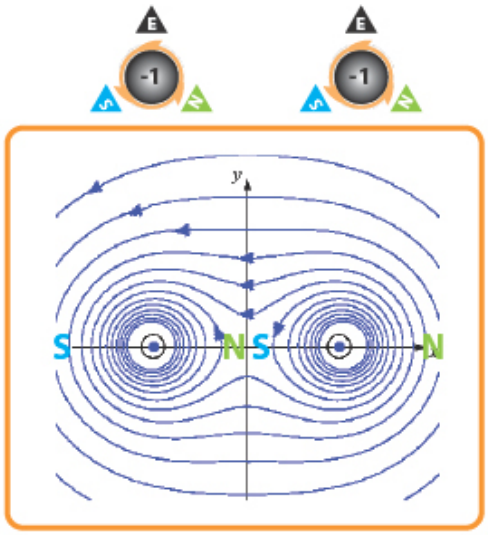


$$\mu_0 = 4\pi \text{ e-7 } \frac{N}{A^2}$$

c^2

Joseph Henry

(17 December 1797 – 13 May 1878)

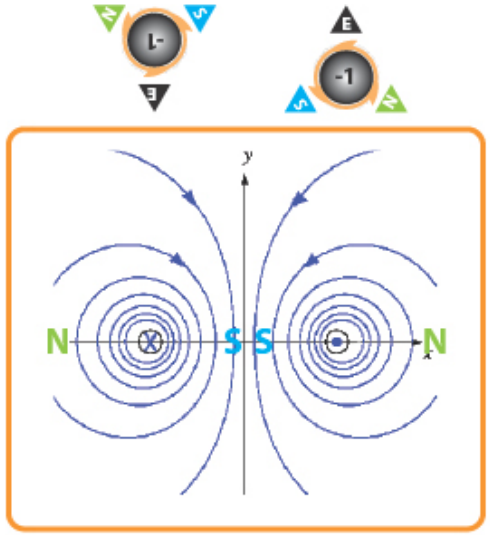


Reinforced Magnetic fields

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

Magnetic moments of same charges moving in the same direction

Magnetic moments of same charges moving in opposite directions

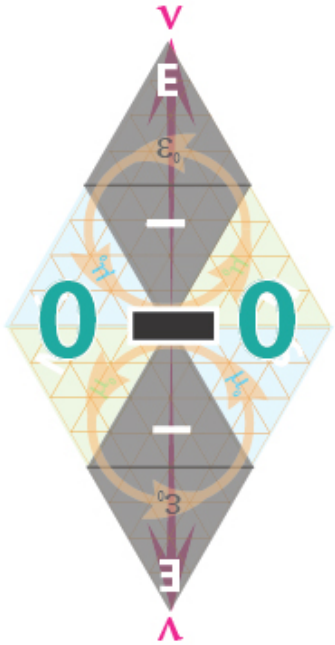


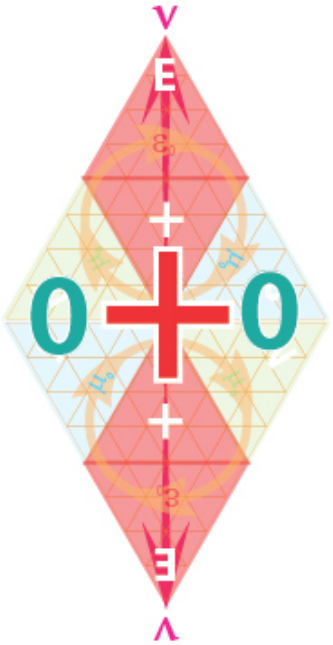
Opposing Magnetic fields

Electro-static fields

Similar charge electric dipole pairings
create 'neutralised' Magnetic dipoles

There are no such things as purely Electric or Magnetic fields





v=0

p≠0

Where Energy couples
with equal and opposite vectors

0

stationary KEM fields are created
otherwise know as EM fields

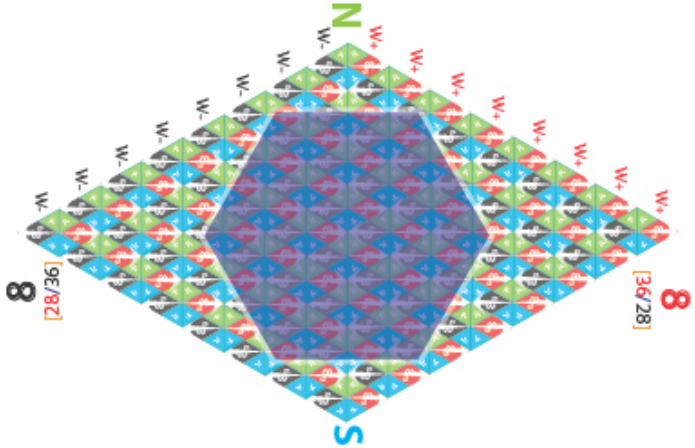
All Energy fields are Electro-Magnetic in nature

'Neutralised' electric dipole pairings
create Magnetic dipole fields

Magneto-static fields

Charged EM field geometries

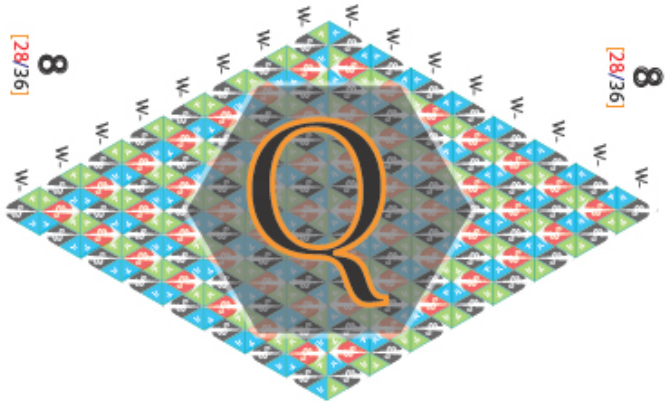
Opposite charge fields
can produce neutral EM fields
(with magnetic moments)



0
[64/64]

Electrostatic charged matter generate
charged energy fields around them

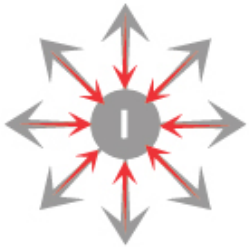
Moving charged particles generate
Kinetic energy & Magnetic moments



16
[56/72]

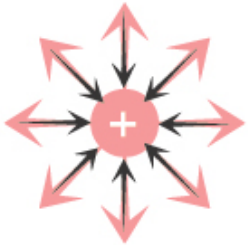
Negative charge electrostatic fields

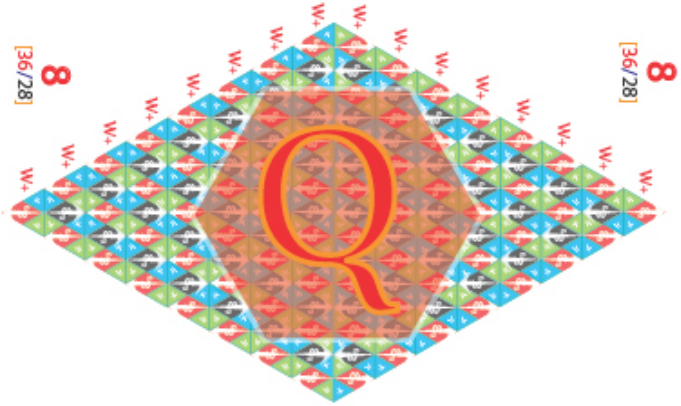
Repel Negative charges
and
Attract Positive charges



Charged electrostatic fields

Accelerate Charged particles
(directionally dependent on
their nett geometries)





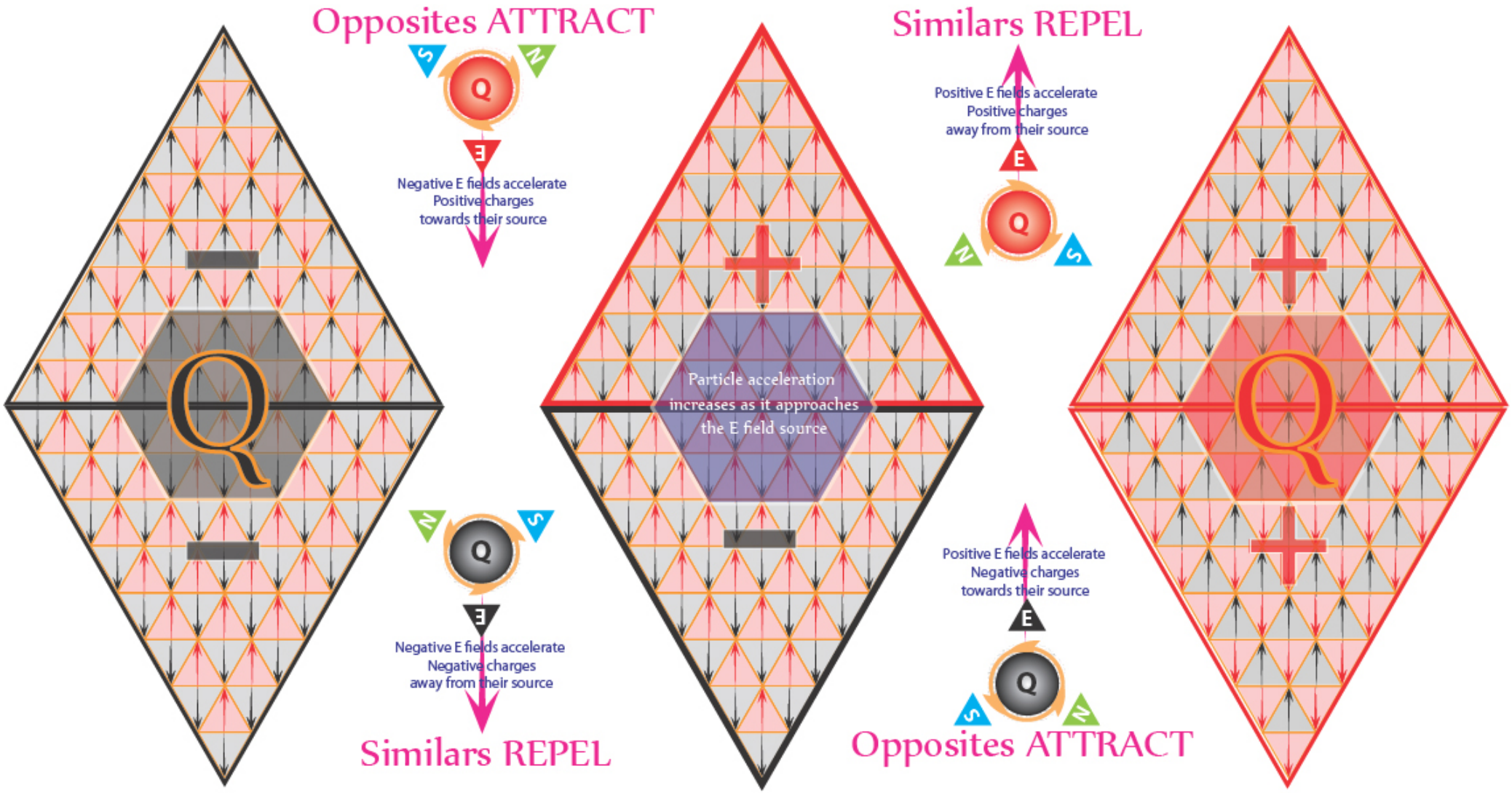
16
[72/56]

Positive charge electrostatic fields

Repel Positive charges
and
Attract Negative charges

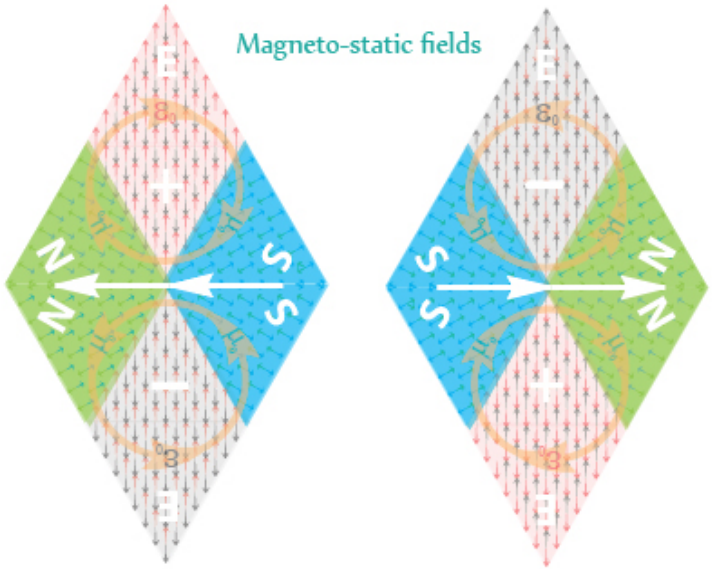
E field acceleration of charged particles

Electric fields can accelerate charged particles within their geometry
dependent on the particle's nett charge

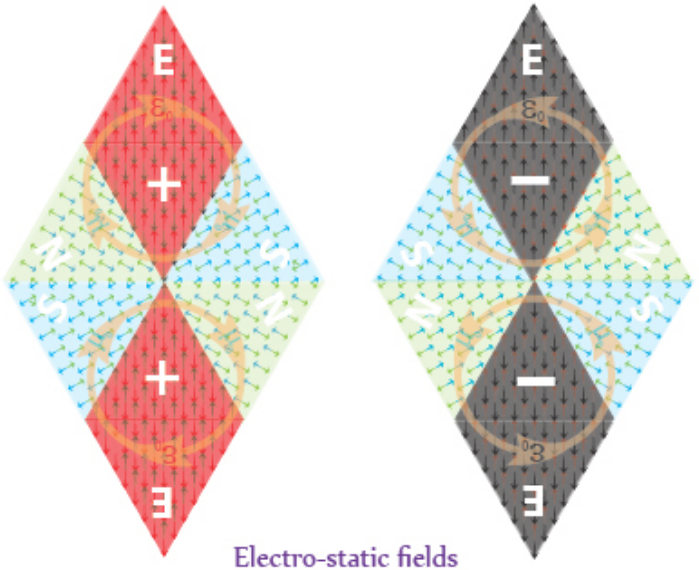


The charge quanta within Neutral particles are affected equally by Electric fields

‘LAW OF ATTRACTION’

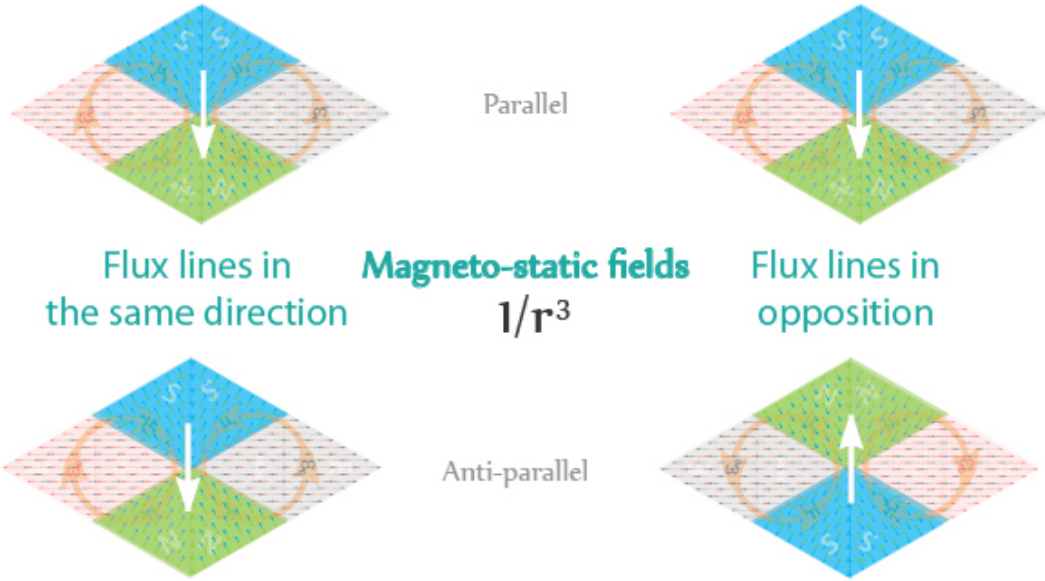


ZPFs can combine to form
4 distinct static EM fields

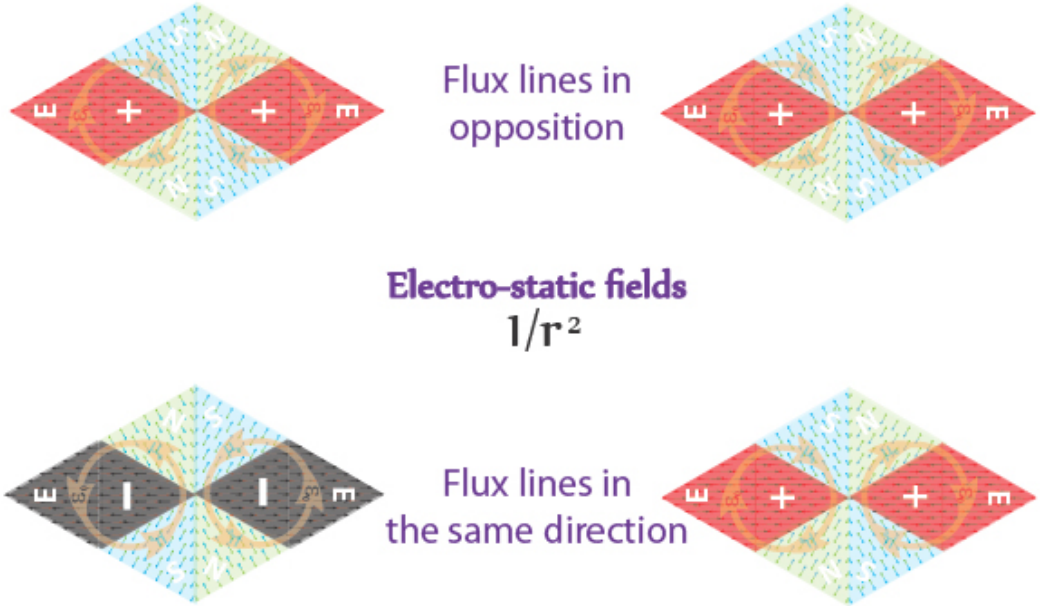


Similars REPEL
[QAM momenta vectors in opposition]

Opposites ATTRACT
[QAM momenta vectors in same direction]



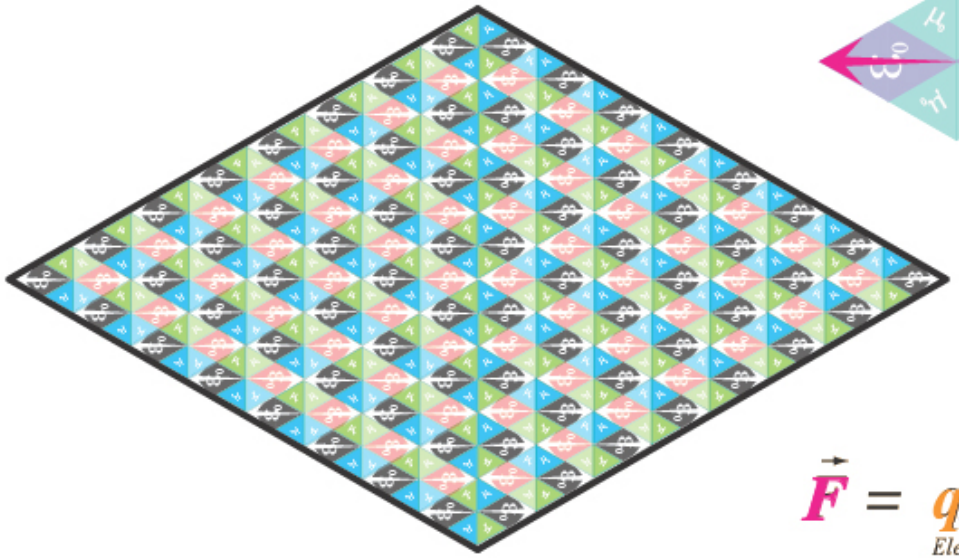
ElectroMagnetic fields



Law of Interaction

[Electric Fields]

Negative Electric Field

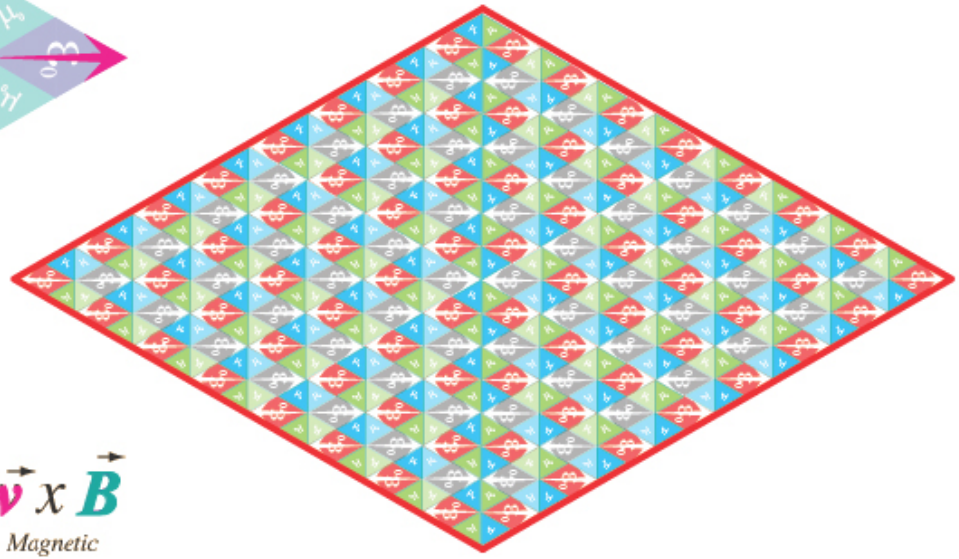


Repels Negative charges
and
Attracts Positive charges

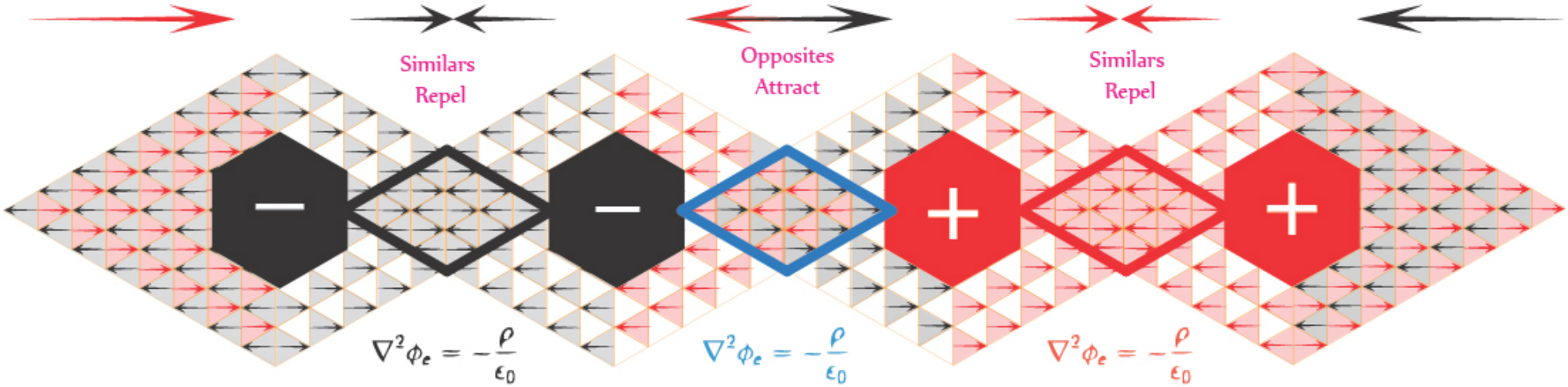
$$\vec{F} = q\vec{E} + q\vec{v} \times \vec{B}$$

Electric force *Magnetic force*

Positive Electric Field



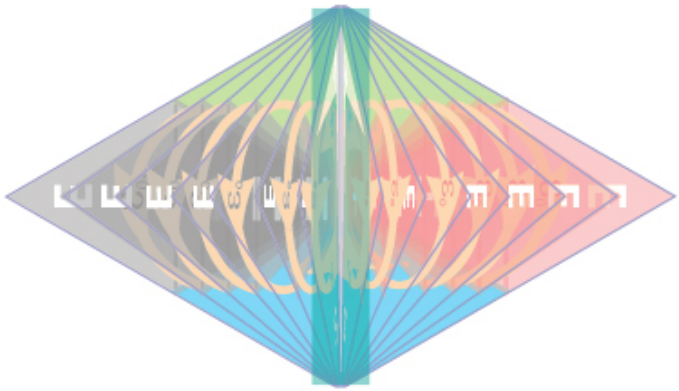
Repels Positive charges
and
Attracts Negative charges



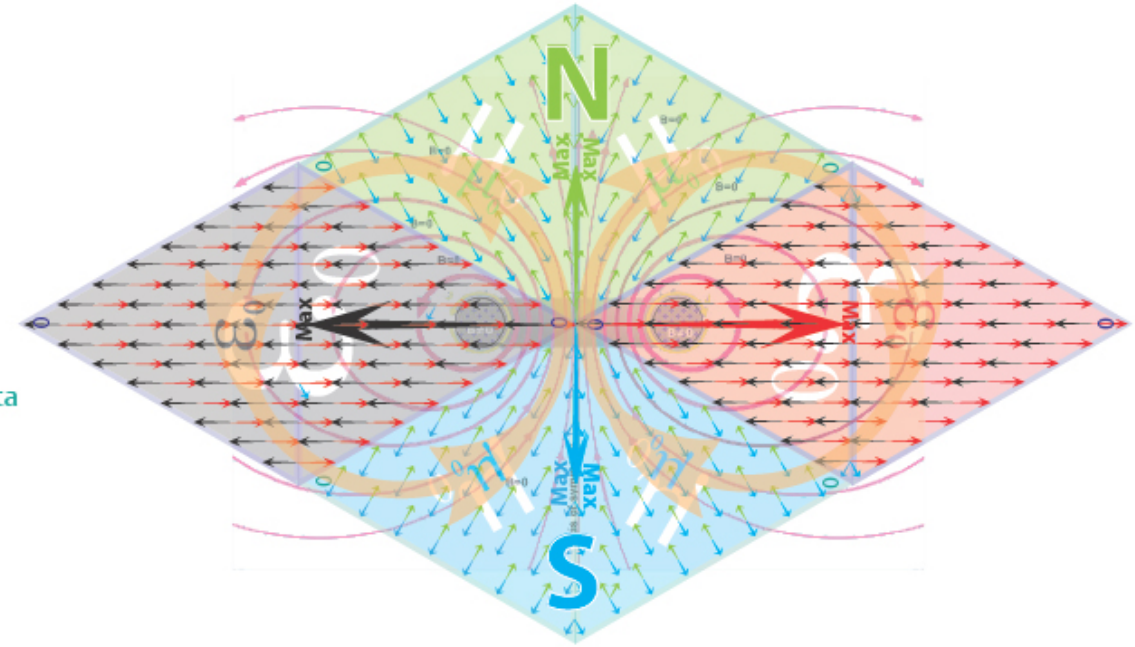
Electro-Magnetic Field Lines

The magnetic field at any given point is specified by both
a direction and a magnitude (or strength)

3D Magnetic lines of Force
are the result of multiple
neutral charge EM fields



Magnetic North Poles have
divergent north vectors and
convergent south vectors



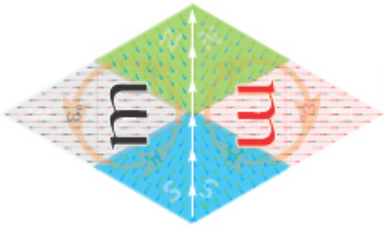
Magnetic Field lines
are a result of
the Electric flux flow
of Neutral pair ZPF quanta

EM energy fluxs 'flow'
externally
North to South
&
South to North
internally

Magnetic South Poles have
divergent south vectors and
convergent north vectors

Every particle of Matter in motion
produces its own dipole EM fields
as a result of their Charge [nett quanta]
which combine to produce a
macroscopic externalised KEM field.

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



Magnetic fields are produced by the dipole pairing of opposite electric charge fields
or
by moving electric charges which in turn produce associated Kinetic energies
[Neutral Electric field and equal srength Magnetic moment]

Magnetic field lines

Magnetostatic Dipole

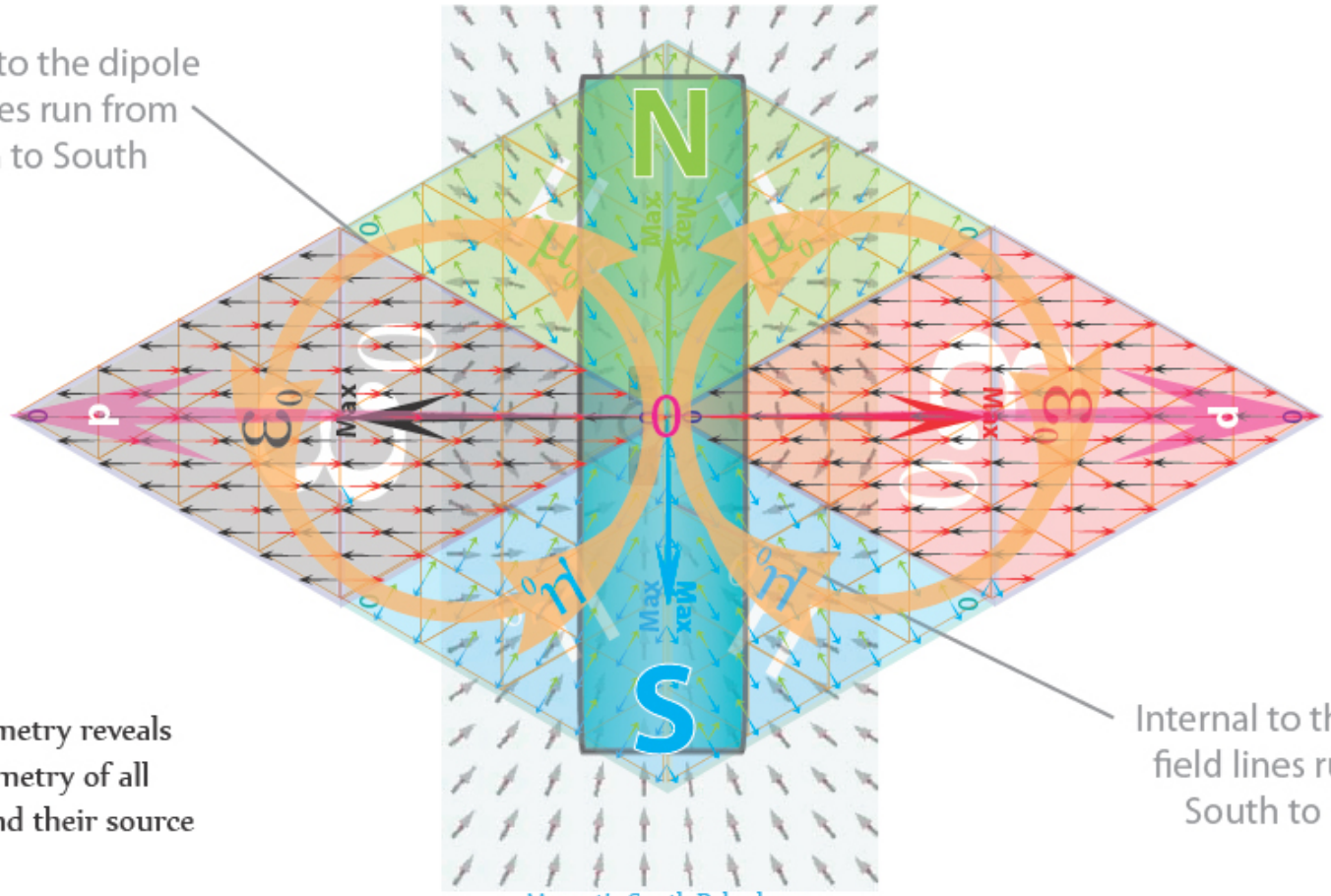
Magnetic field lines were introduced by Michael Faraday (1791-1867) who named them "lines of force

Michael Faraday

(22 September 1791 – 25 August 1867)

Magnetic North Poles have divergent north vectors and convergent south vectors

External to the dipole field lines run from North to South



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

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

Tetryonic geometry reveals the true geometry of all EM field lines and their source

Internal to the dipole field lines run from South to North

Magnetic South Poles have divergent south vectors and convergent north vectors

Permanent Magnets can be viewed as neutral charge Electrostatic EM fields

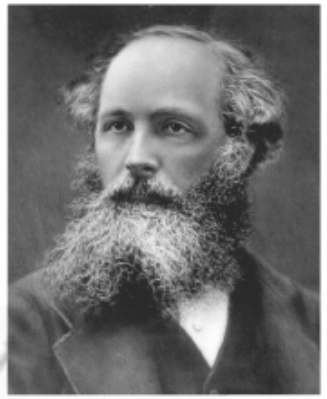
Similarly to conventional vs electron current flows Magnetic field vectors can be modelled in two directions of 'flow'

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.

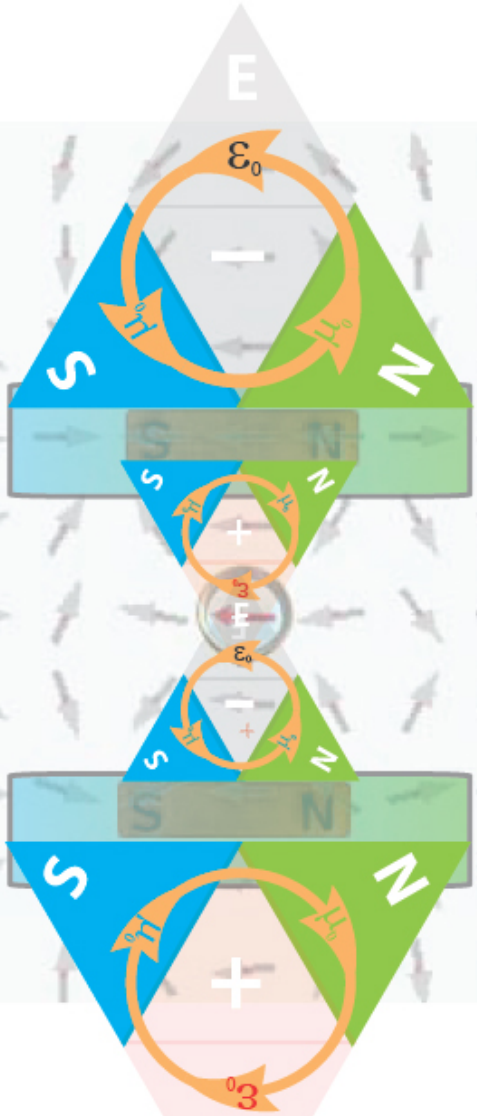
Parallel magnetic lines of force traveling in opposite directions tend to unite with each other and form into single lines traveling in a direction determined by the magnetic poles creating the lines of force.

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

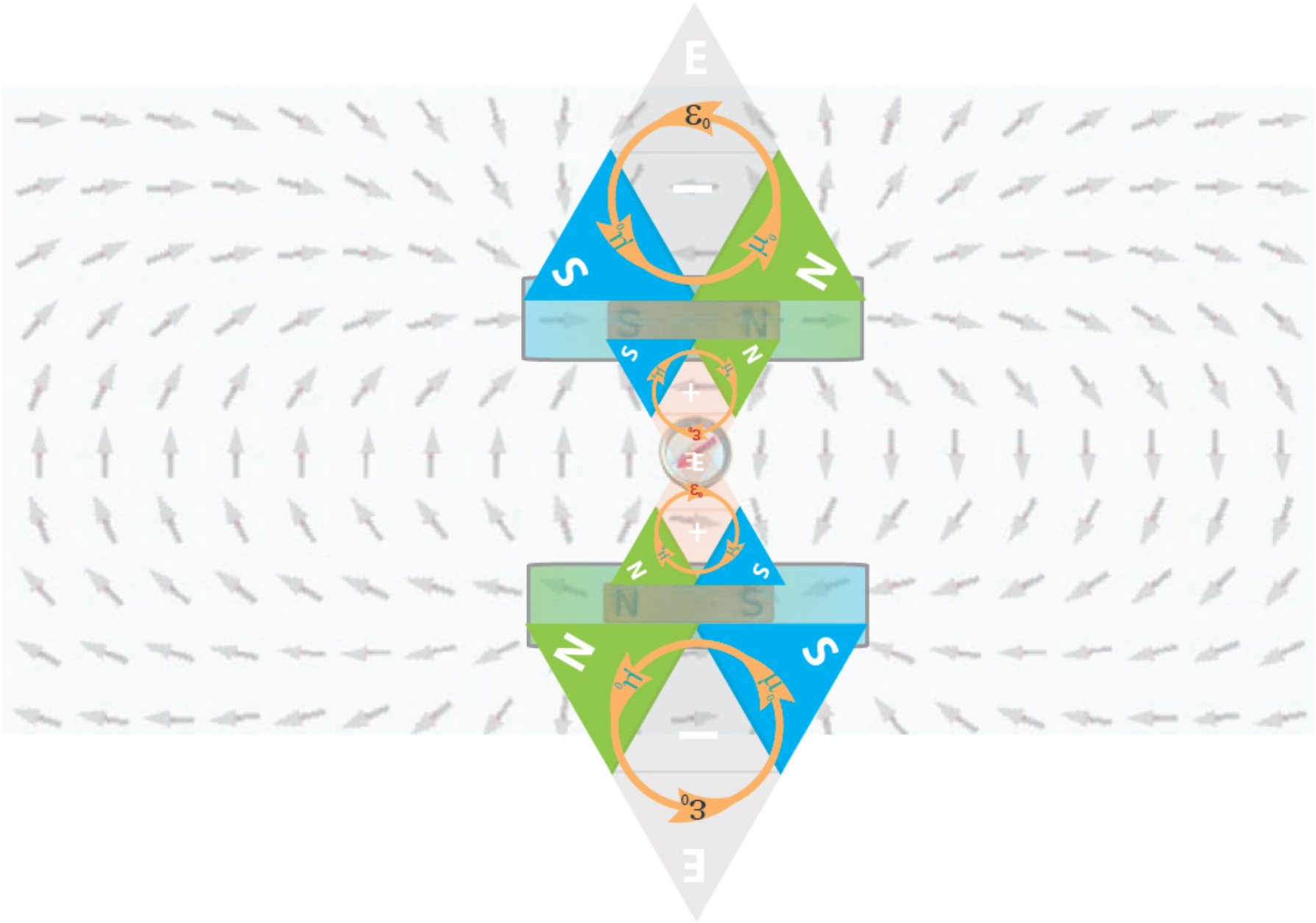
Maxwell showed that the equations predict the existence of waves of oscillating electric and magnetic fields that travel through empty space at a speed of 310,740,000 m/s.

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.

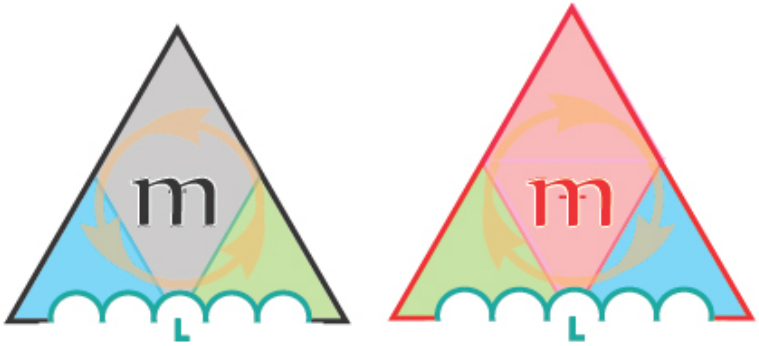
The specific features of Faraday's field concept, in its 'favourite' and most complete form, are that force is a substance, that it is the only substance and that all forces are interconvertible through various motions of the lines of force. These features of Faraday's 'favourite notion' were not carried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

In fact Tetryonics now shows the lines of Force to be a direct result of the various geometries of equilateral Energy-momenta contained in EM fields

Anti-Parallel Magnetic Dipoles



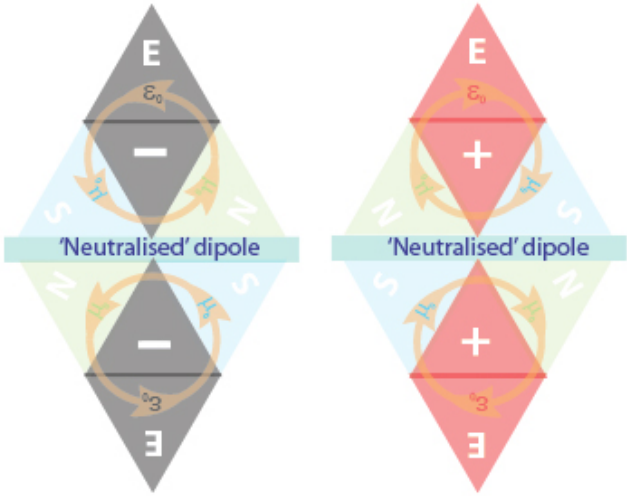
Magnetic Moments



Single ZPFs are
'ideal quantum inductor elements'

1

Electro-static Energies
Charges



ZPFs follow Lenz's Law

Positive charge energy/flux has Clockwise movement
classically modelled with divergent force lines

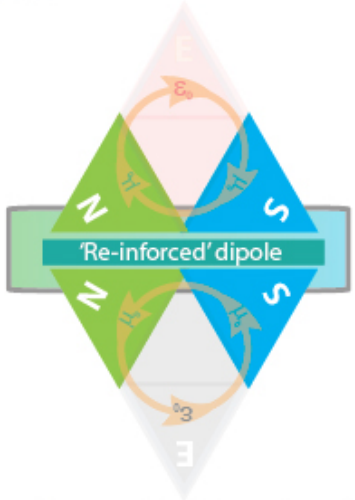
Negative charge energy/flux has Counter-clockwise movement
classically modelled with convergent force lines

Each charge type
has distinct Magnetic dipole
alignments

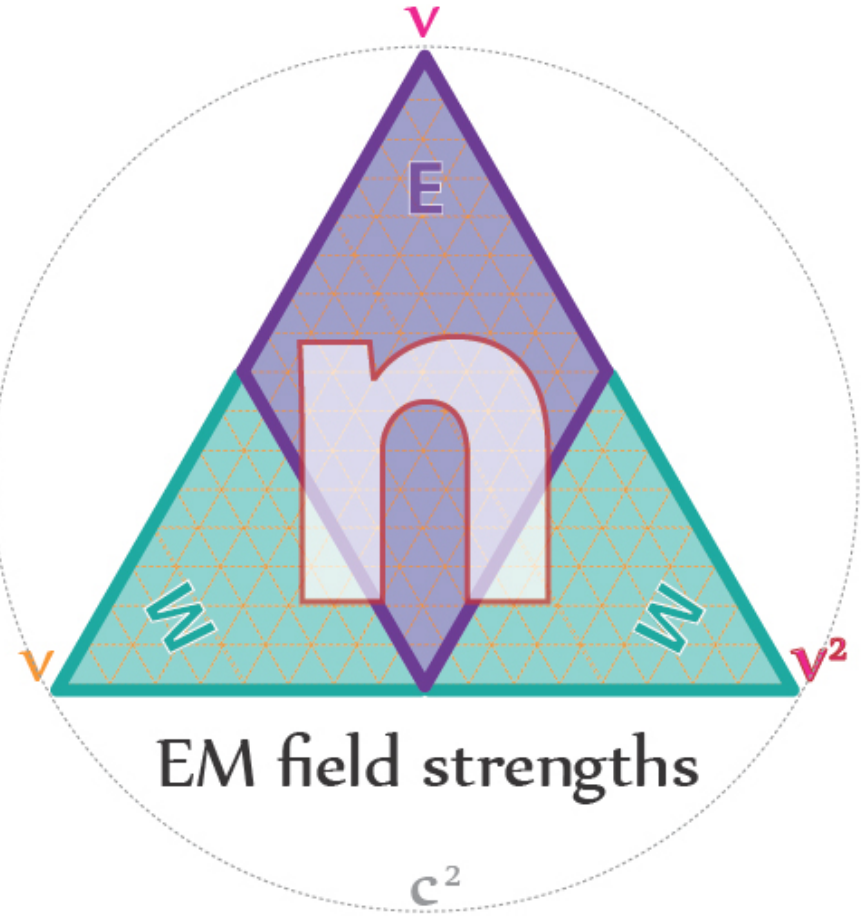
which in turn create
2 distinct orientations of
magnetic moments

2

Magneto-static Energies
Kinetic Energies



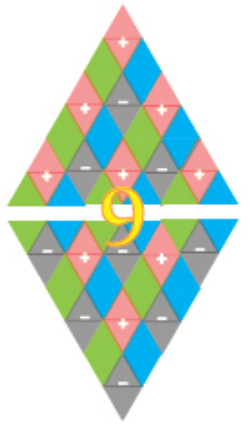
ZPF sets can form inductively coupled
quantum Harmonic Oscillators



All Energies are 'square' quanta scalar fields
made up of quantised Electric & Magnetic fields

All EM fields have the same geometry [v^2]
Electric fields diminish proportionally to 1/r^2
Magnetic dipoles diminish proportionally to 1/r^3

As the mass-Energies in EM fields increases
their quanta are subject to Lorentz contractions



Electrostatic particle modeling

Matter
Tetryonic geometry
Total mass-energy quanta

T[4n] Standing wave charge fields
form electrostatic Particles
[Charged and Neutral Matter]

Total Charge quanta imbalances
are the source of electrostatic
point particle charges

Non-neutral
nett
Tetryonic quanta

4nπ

Positive
Charge
Particles

Equal numbers
of opposite
Tetryonic quanta

Neutral
Charge
Particles

Non-neutral
nett
Tetryonic quanta

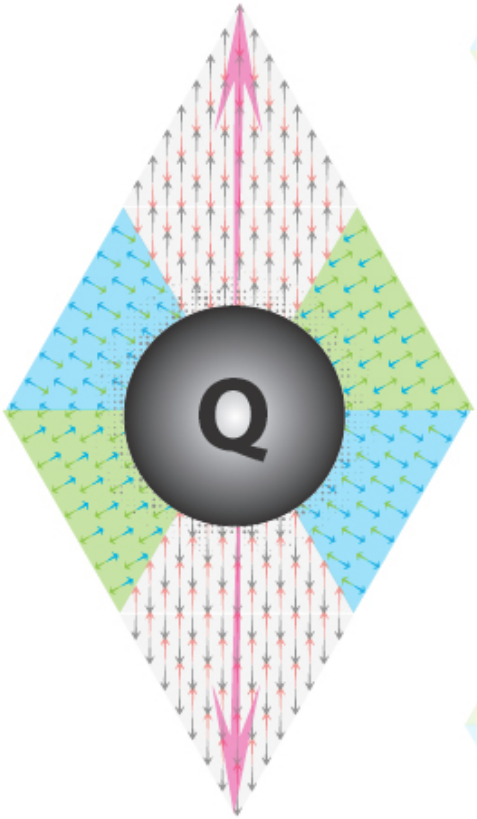
4nπ

Negative
Charge
Particles

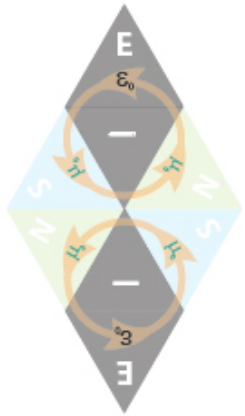
All particles in motion create secondary KEM fields
[Electric fields and Magnetic moments]

Electro-static Fields

Momenta
acting in oppose directions
results in zero velocity

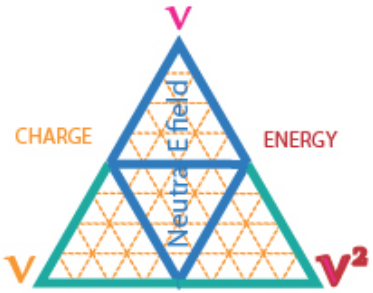


Zero Velocity
equates to
Zero nett Momentum



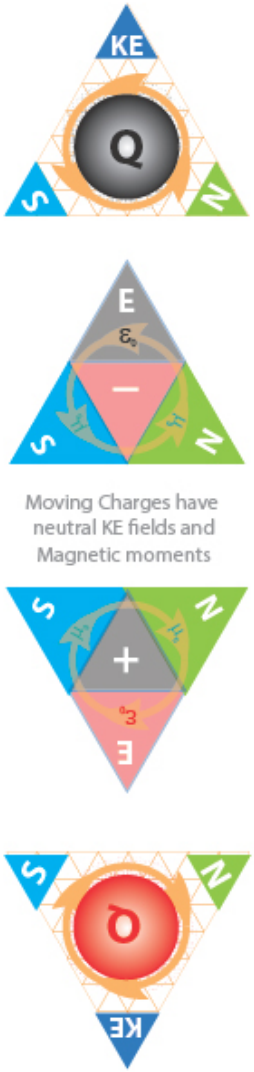
Stationary Charges
have neutralised
magnetic dipoles

Charged particles
in motion have a
Magnetic moment

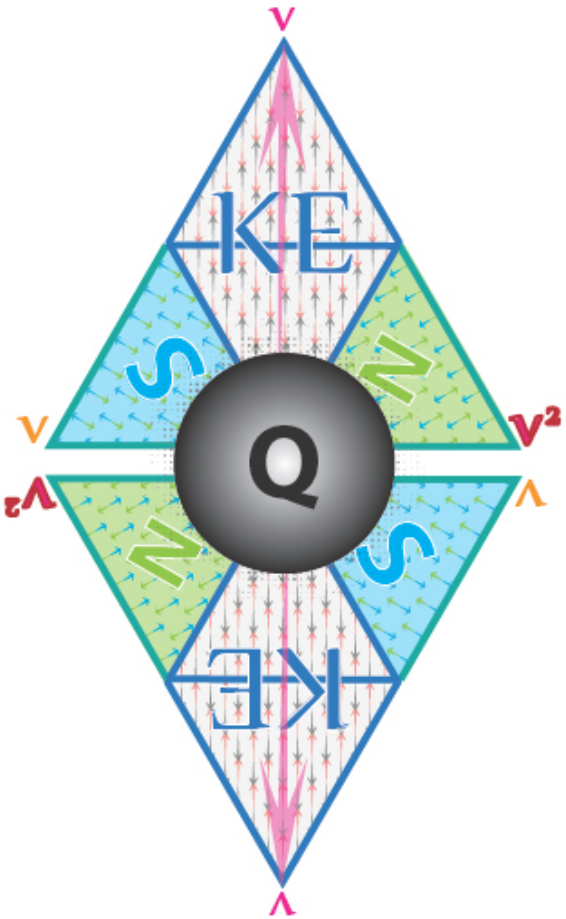


The Kinetic Electric
& Magnetic energies
are contained in an
KEM field extending
from a charged
particle in motion

Kinetic EM Fields

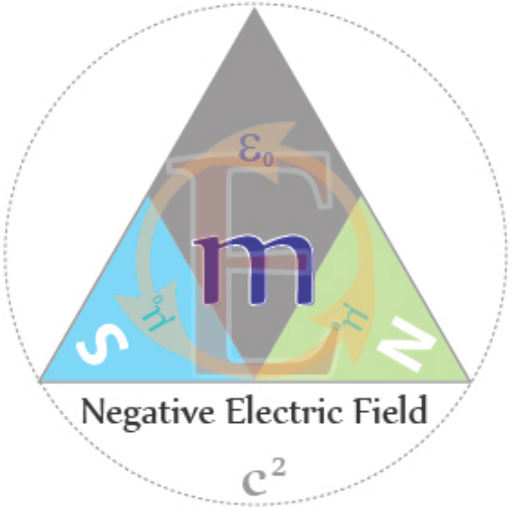


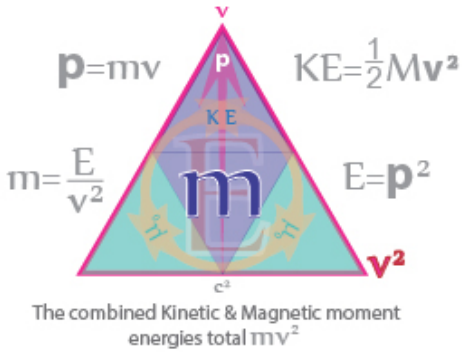
Motion in any direction
produces
Kinetic & Magnetic energies



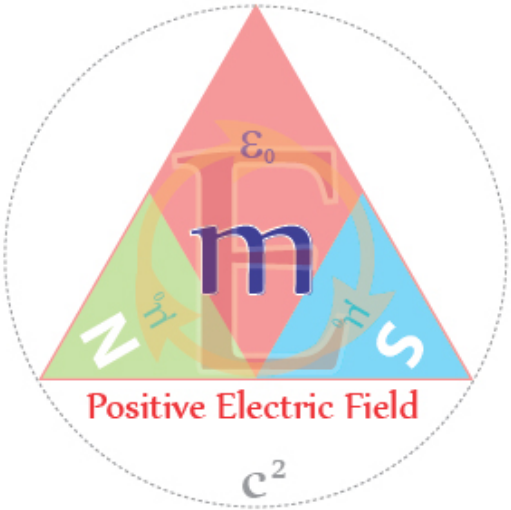
The Strength of the
Kinetic Electric field & Magnetic moment
is directly proportional to
the square of the particle's Velocity

Electric & Kinetic Fields



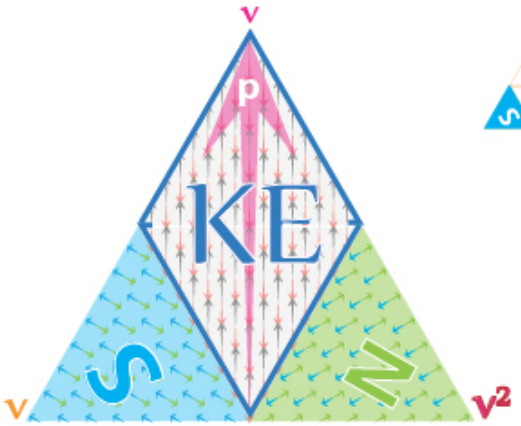


The combined Kinetic & Magnetic moment energies total mv^2

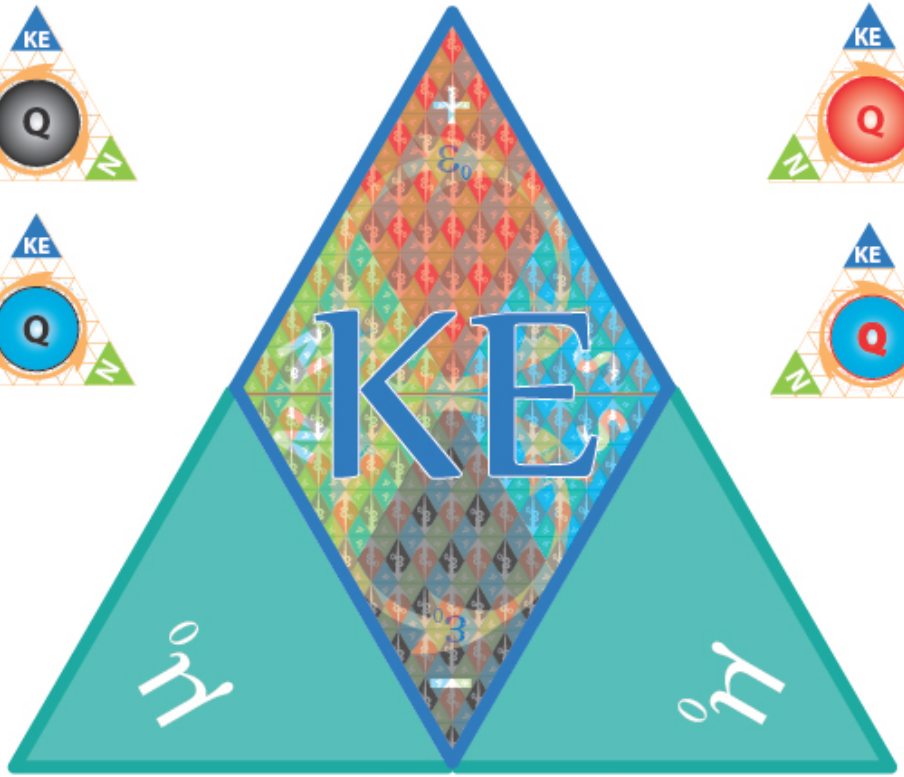


Kinetic Energy field

KEM field created by a Negative charged body



Negative charges repelled
Positive charges attracted



Neutralised Electric fields
Strong Magnetic moments

KEM field created by a Positive charged body

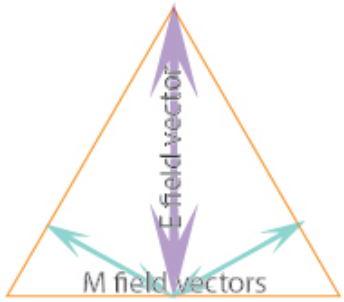
Positive charges repelled
Negative charges attracted

EM & KEM force vectors

All mass-Energy quanta are ideal Quantum Inductors

The EM force vectors create orthogonal triangular EM Fields

Electric fields propogate orthogonally to the Magnetic dipole field

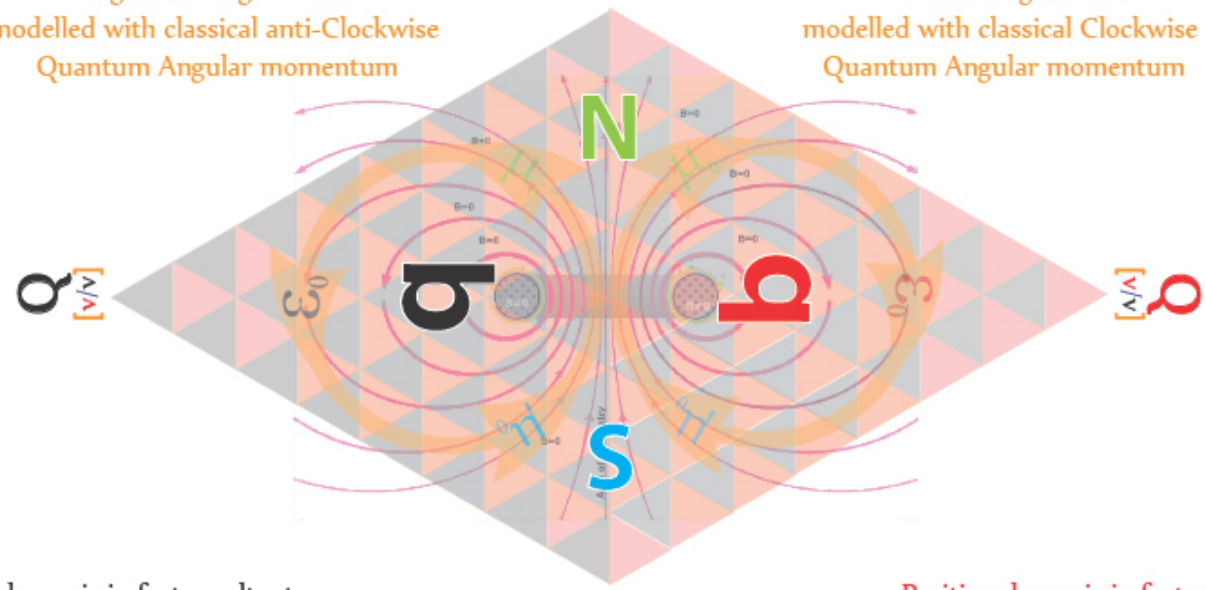


Magnetic flux external to the Magnetic dipole flows from North to South
&
Internal to a Magnetic dipole it flows South to North

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

Negative charge can be modelled with classical anti-Clockwise Quantum Angular momentum

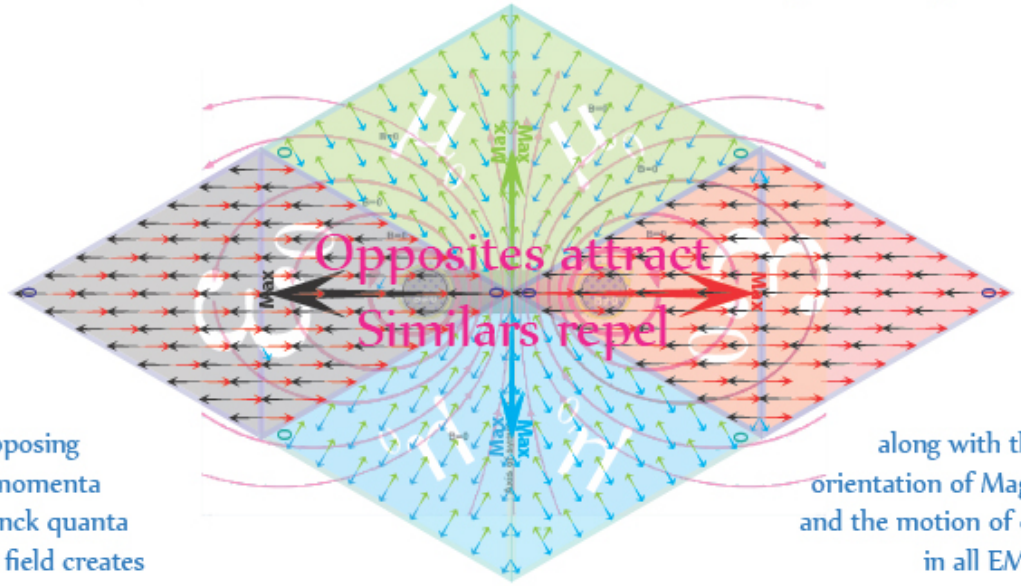
Positive charge can be modelled with classical Clockwise Quantum Angular momentum



Negative charge is in fact resultant from nett Positive charged mass Quantum Angular momenta quanta

The opposing Energy-momenta cancel each other creating a Magneto-static field

Positive charge is in fact resultant from nett Positive charged mass Quantum Angular momentum quanta



The opposing Energy momenta of each Planck quanta within a EM field creates the Forces of Interaction

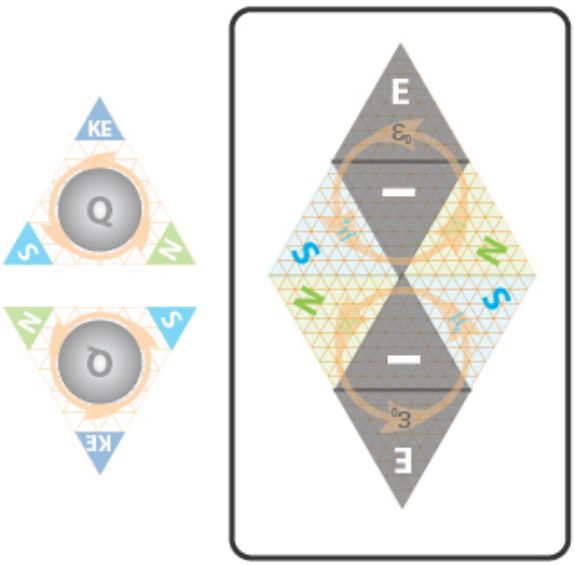
along with the distinct orientation of Magnetic moments and the motion of charged particles in all EM fields [Lorentz Forces]

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

EM Forces and ZPFs

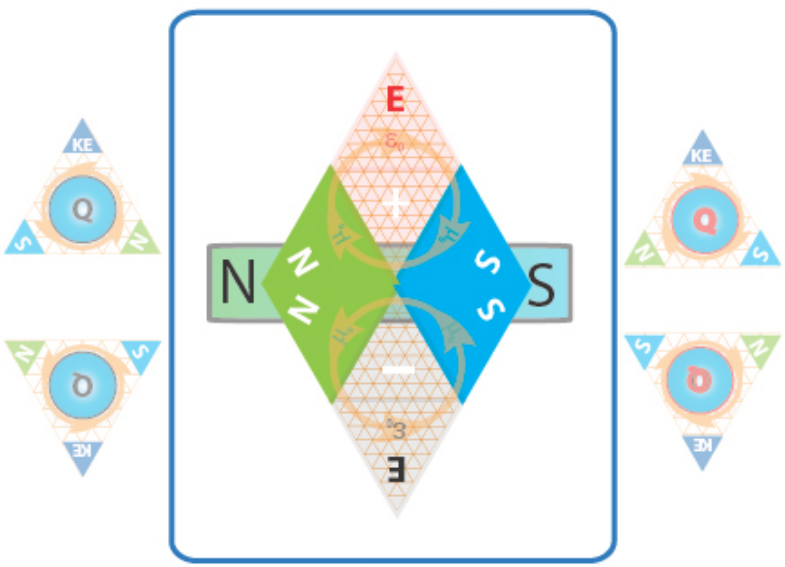
ZPF quanta can combine in differing combinations
to produce 3 distinct charged sets

Negative Charges



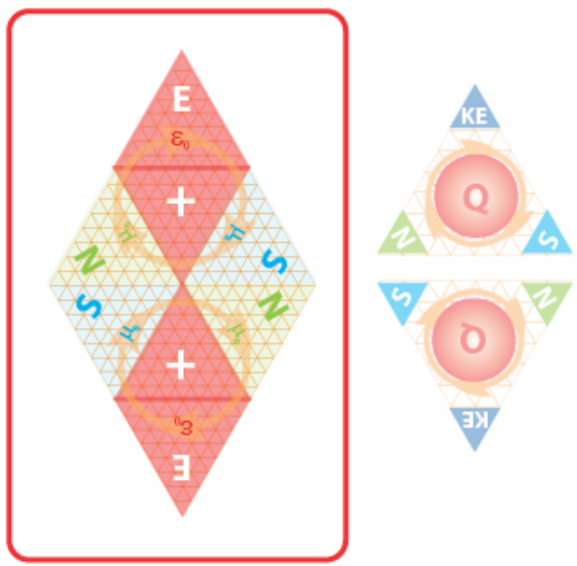
'Neutralised'
Magnetic dipole moment

Neutral Charges



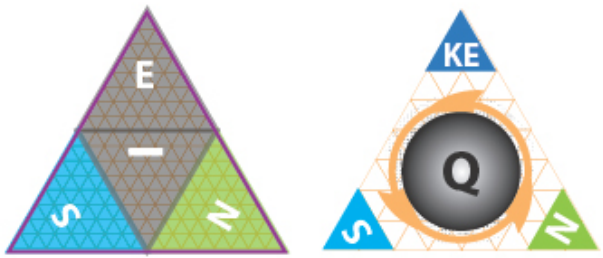
Magnetic dipole moment

Positive Charges



'Neutralised'
Magnetic dipole moment

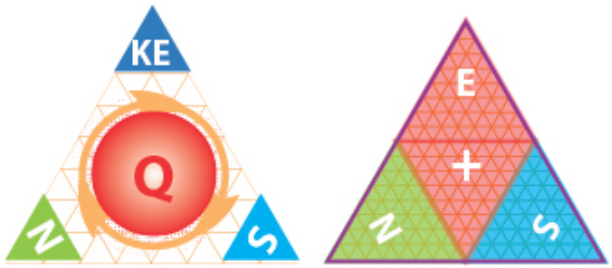
All EM mass-Energy-Matter can be modelled using Tetryonic geometry



Negative charge particle KE field and magnetic moment

Zero Point Field EM geometry accounts 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



Positive charge particle KE field and magnetic moment

Modelling particulate KEM fields

All Electrostatic particles have Tetryonic geometries resulting from their nett Charges

The KEM fields of Charged particles in motion have equilateral geometries reflecting their Charge and velocities

4 [4/8] 8 [2/10]

12 [30/42]

Negative Charges

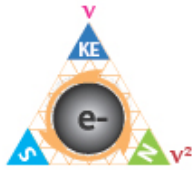
Non-neutral nett Tetryonic quanta

24 [42/66]

4 [0/4] 0 [2/2] 4 [4/0]

0 [6/6]

0 [6/6]

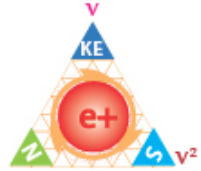


12 [0/12]

Neutral Charges

Equal numbers of opposite Tetryonic quanta

0 [24/24] 0 [42/42] 0 [84/84]



12 [12/0]

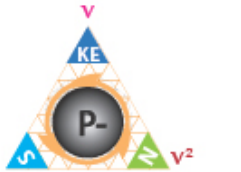
4 [8/4] 8 [10/2]

12 [42/30]

Positive Charges

Non-neutral nett Tetryonic quanta

24 [66/42]



12 [12/24]

0 [18/18]

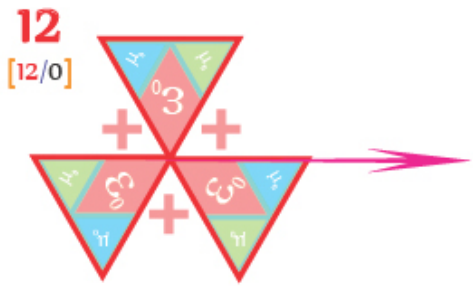
12 [24/12]

Kinetic EM fields

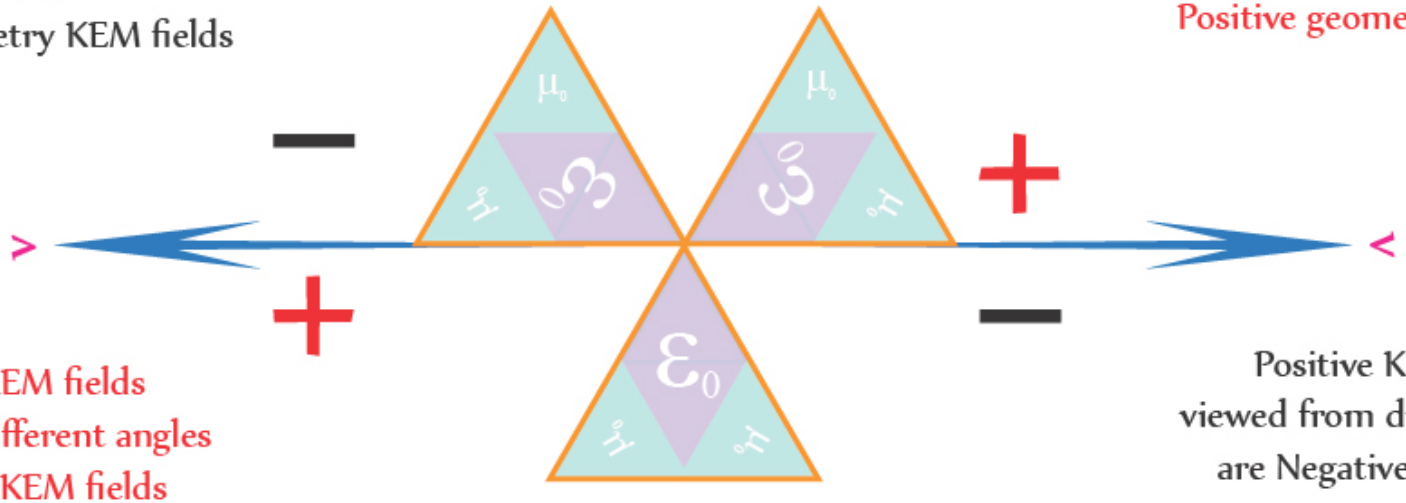
All Kinetic EM fields resulting from motion have charge field geometries
resulting from the charged Matter geometry of the particle in motion

Negative Charge particles
produce
Negative geometry KEM fields

KEM field charge geometries
do not contribute to the nett charge

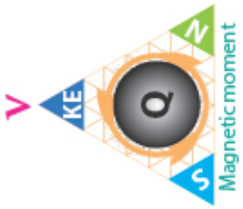


Positive Charge particles
produce
Positive geometry KEM fields

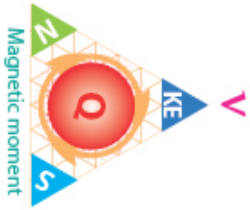


Negative KEM fields
viewed from different angles
are Positive KEM fields

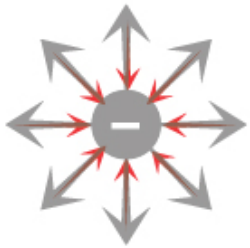
Positive KEM fields
viewed from different angles
are Negative KEM fields



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 a neutral KE field with a magnetic moment



Point Particles and KEM fields



e-

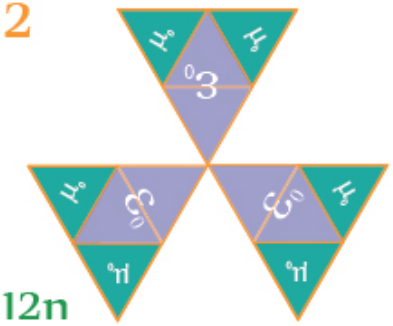
12

Leptons T[12]
Quarks T[12]

Rest Matter has a standing wave geometry [4n]π

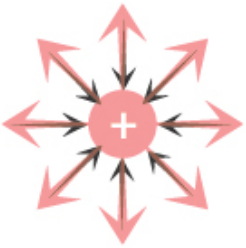
Baryons T[36]

12



12n

Rest Matter



e+

12

Bosons T[ODD]

Kinetic EM energy is divergent from a Particle's rest Matter

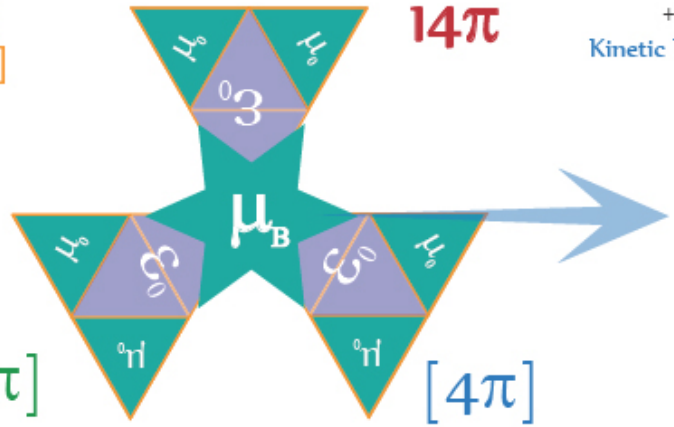
Photons T[EVEN]

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

Charge

Q

[ν/ν]



14π

Rest Matter
+
Kinetic Energy

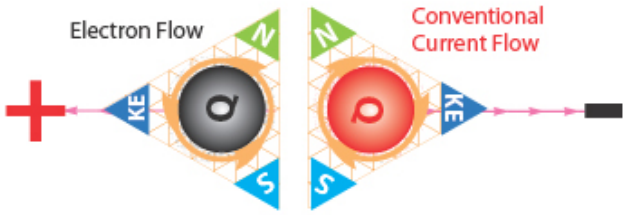
[12π]

Invariant Rest Matter

[4π]

Kinetic Energies

Particulate EM fields

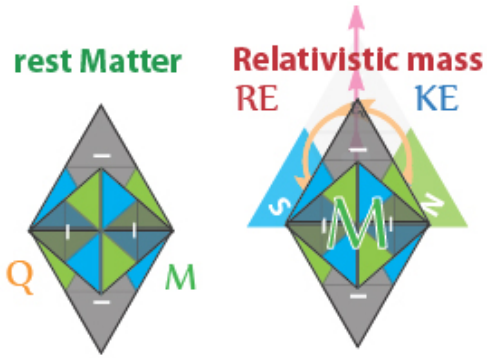


ZPFs geometries can be used
to model the KEM fields
of charged particles

All particles consist of
Charged EM field geometries

Leptons [12]
Quarks [12]
Baryons [36]
Elements [84]

The mass-Energy content of all charge fascia
constituting massive particles are proportional
to the intrinsic velocity of the standing wave

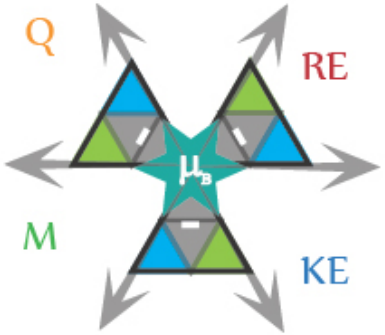


Electro-static particles
have neutralised
magnetic dipoles

Kinetic motion
produces
Magnetic moments

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

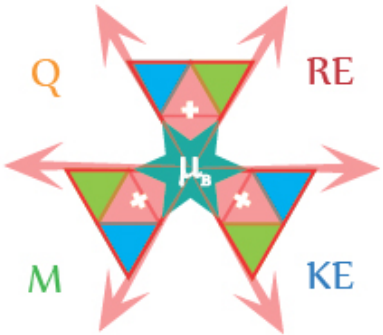
Electron

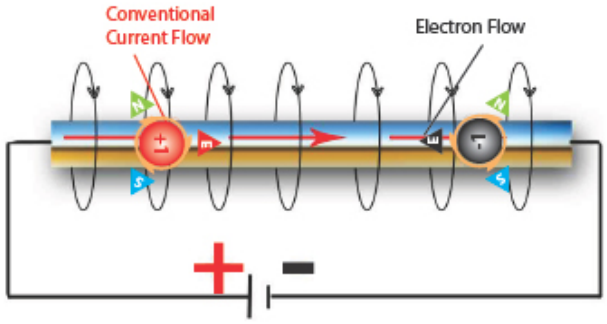


Spherical point charges do NOT exist

Charged Matter is a result of EM standing wave geometry
Every Lepton and Quark has 12 equi-radial electric apexs,
[24 magnetic poles and 12 charge fascias]

Positron

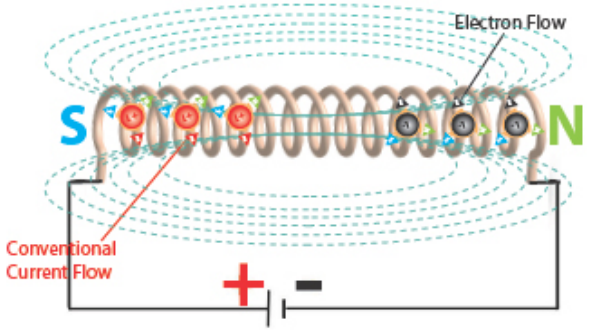




Magnetic field
around a
current carrying
conductor

$$E = h\nu^2$$

Magnetic field
produced
by a
Solenoid



Biot-Savart Law

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

ε_0 $1/R^2$

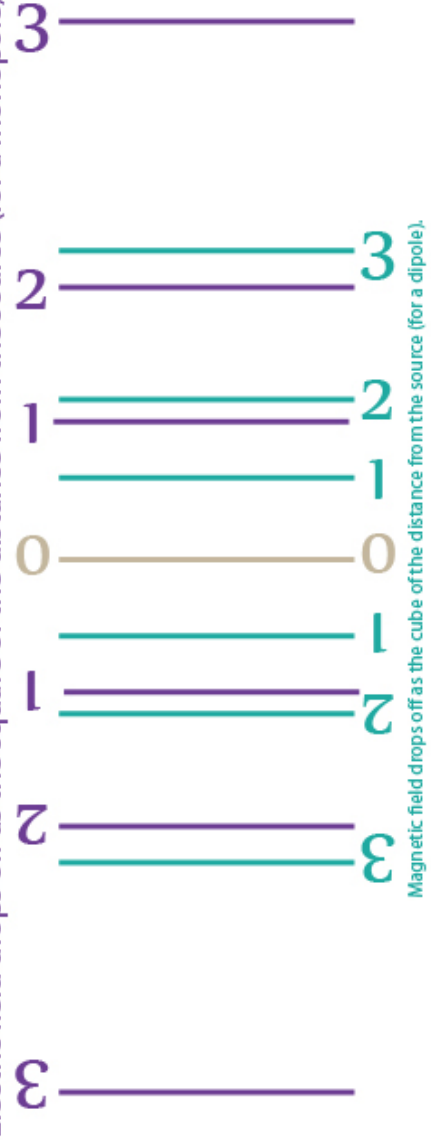
There is an inverse cube relationship between magnetic field strength and magnetic field force with respect to distance from the magnet.

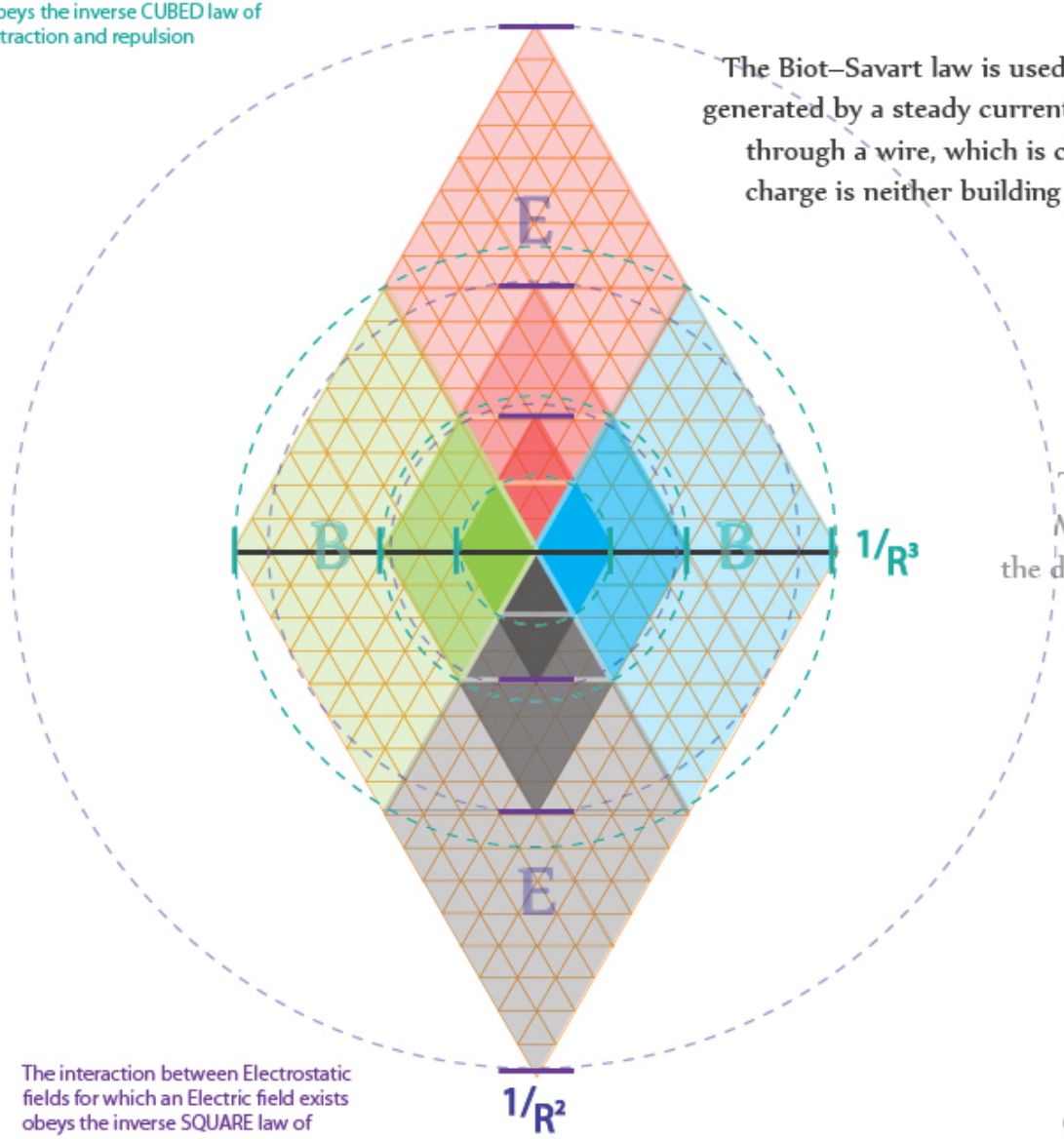
μ_0 $1/R^3$

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

Electric field drops off as the square of the distance from the source (for a monopole).

Magnetic field drops off as the cube of the distance from the source (for a dipole).





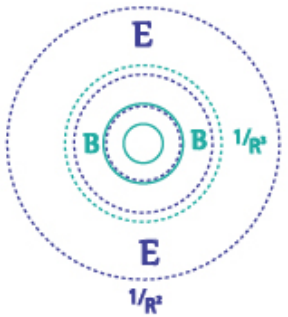
The Biot–Savart law is used to compute the magnetic field generated by a steady current, i.e. a continual flow of charges, through a wire, which is constant in time and in which charge is neither building up nor depleting at any point

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

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

1 : 1.732

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



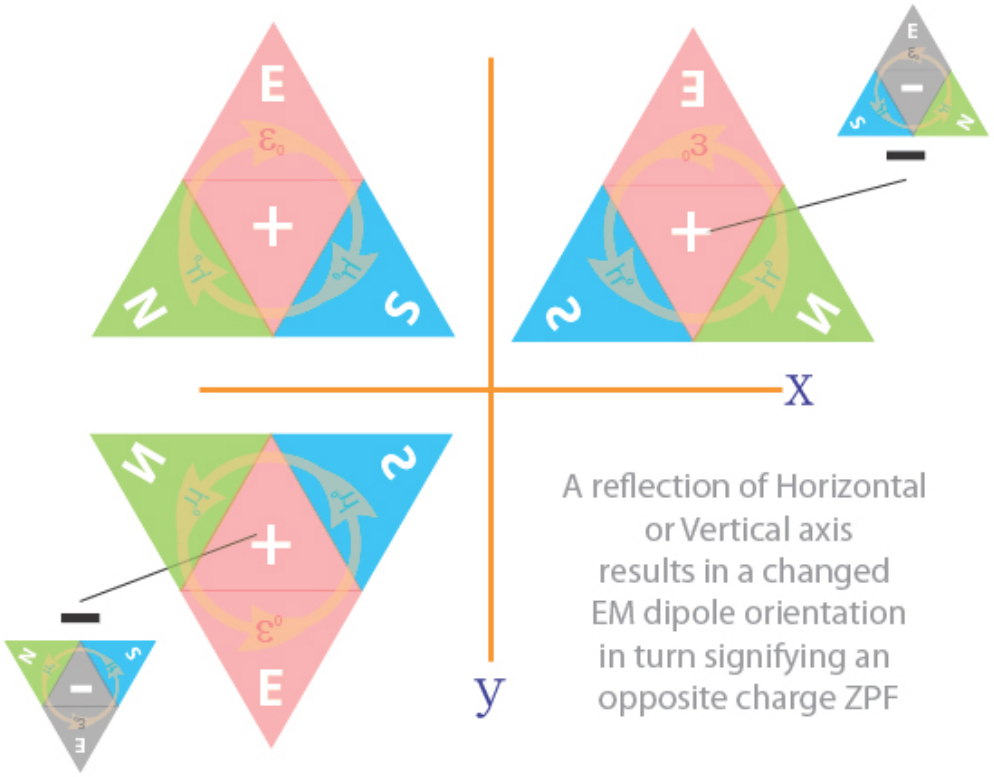
Close to one pole of a magnet, B field strength resembles the inverse square of Electric force. This is because it behaves as a "unipolar magnetic field"

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

$1/R^2$

Chirality of ZPFs

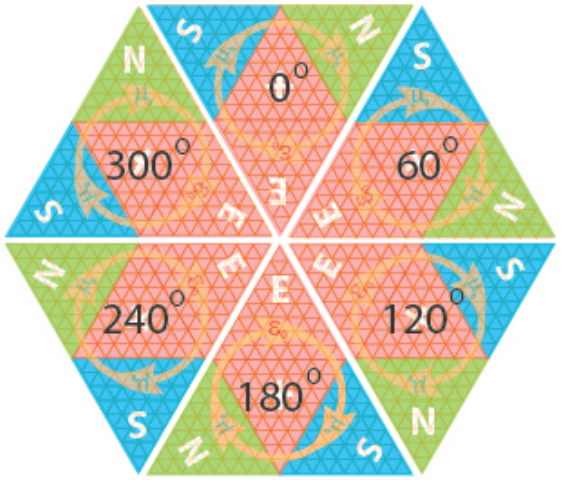
Creates
Polarisation of particles and fields
Different Handedness of spin



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

The Charge of a EM field results from the nett total charge of its constituent quanta

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

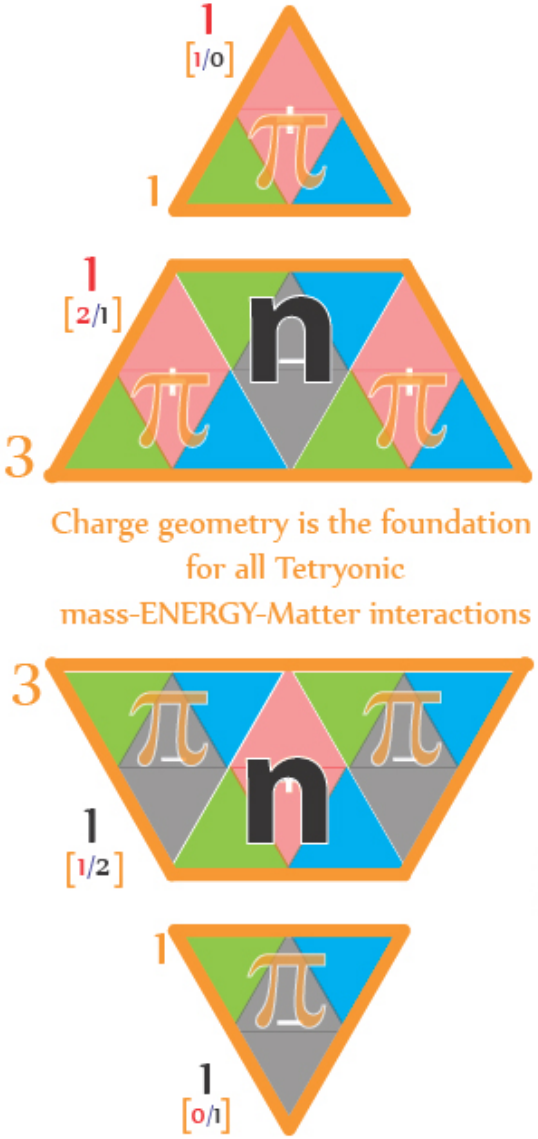


Mirror imaged ZPFs are NOT identical to each other

Irrespective of orientation or rotation:
A Positive ZPF has a Clockwise inductive EM flux direction
A Negative ZPF has a Counter-clockwise 'inductive EM flux direction

ZPFs and Bosons

ZPFs are Planck energy quantum elements



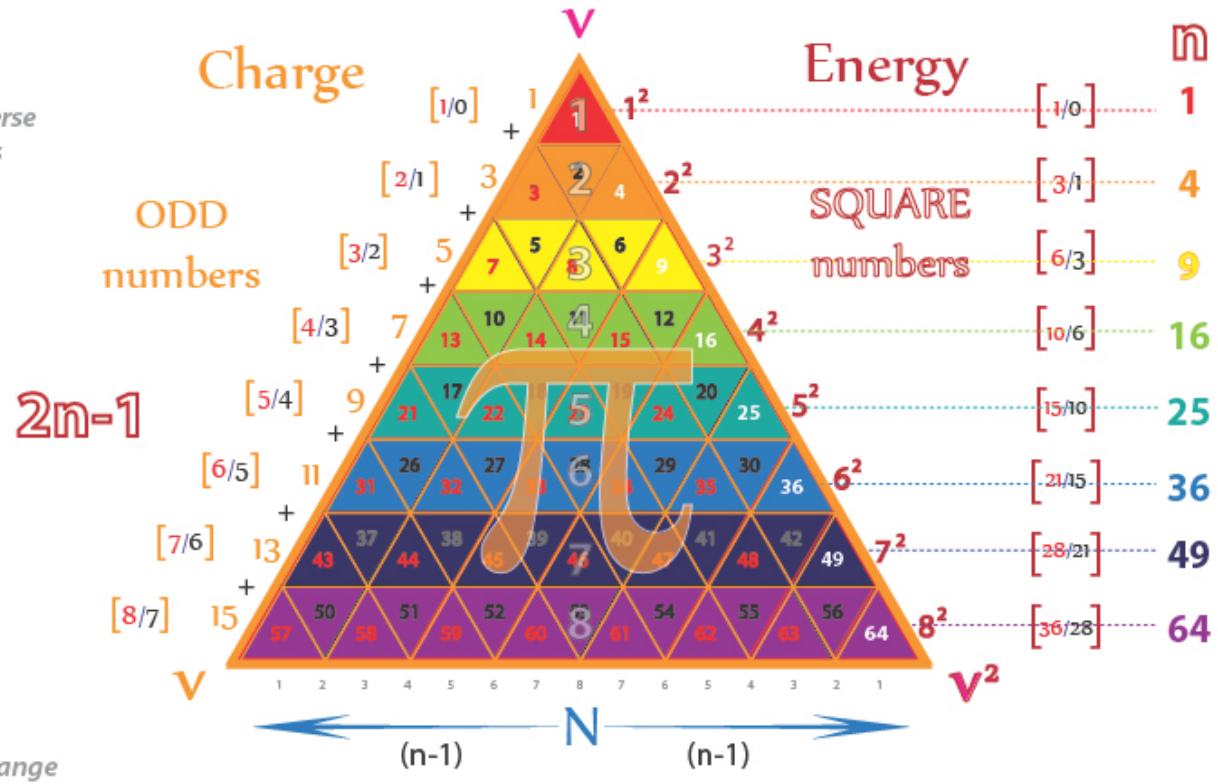
ZPFs are the quanta geometry for Charge, Bosons and Energy

Bosons are transverse Quantum levels

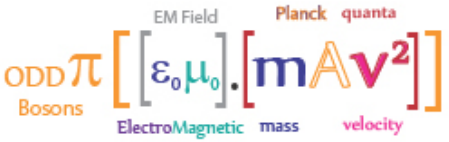
Bosons are the exchange particles for the EM force

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

Final Energy quanta are the Sum of the preceeding Bosons [Quantum levels]



The quanta in each longitudinal Energy geometry are arranged to create a NORMAL Distribution



Bosons form the geometry of Quantum Levels

$$W^{+} = n\pi_{ODD}\left[\left[\varepsilon_0\mu_0\right].\left[mAv^2\right]\right]$$

Force carrier for Positive charge particles

W^{+} Boson

$$ODD\pi_{Bosons}\left[\left[\varepsilon_0\mu_0\right].\left[mAv^2\right]\right]$$

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

CHARGE carrier Bosons are ODD number quanta

Bosons

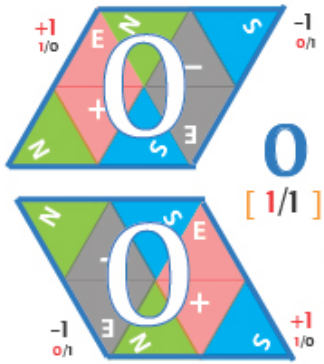
form unit charge Quantum levels that facilitate EM induction between mass-Energy-Matter

Neutral Z Bosons and Photons are EVEN quanta Bosons

$$EVEN\pi_{Photons}\left[\left[\varepsilon_0\mu_0\right].\left[mAv^2\right]\right]$$

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

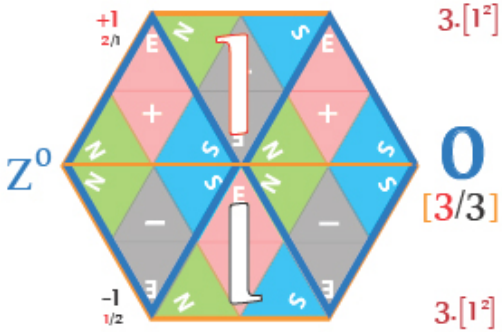
Neutral charge EM force carriers



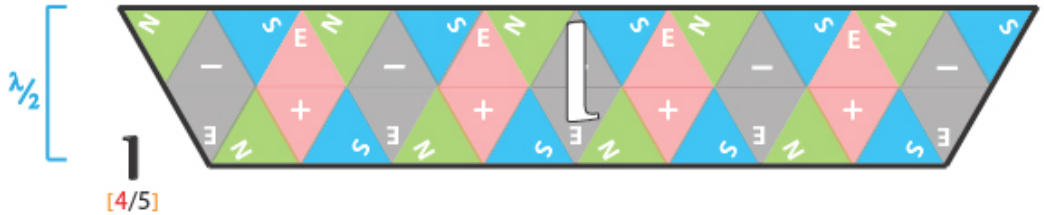
Z^0 Boson

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

They are EVEN numbered alternate geometry Bosons



Photons are alternate geometry Z Bosons



Bosons are 'Matterless' EM waveforms

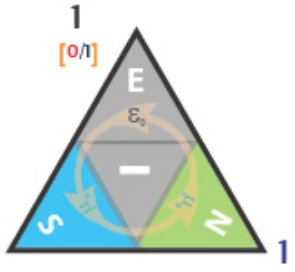
W^{-} Boson

Force carrier for Negative charge particles

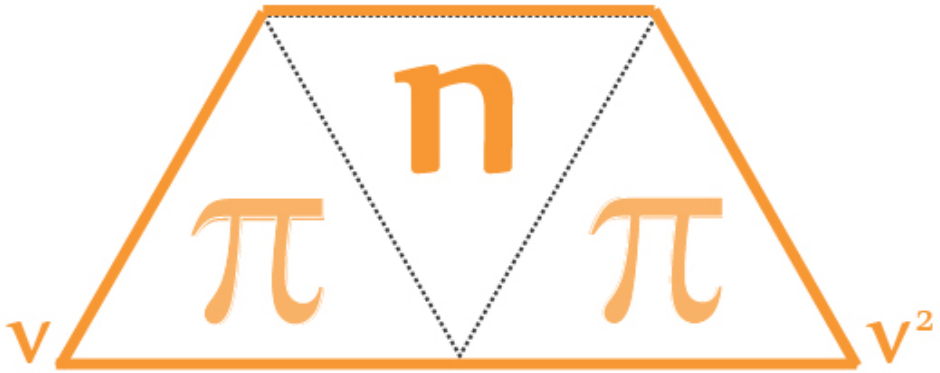
$$W^{-} = n\pi_{ODD}\left[\left[\varepsilon_0\mu_0\right].\left[mAv^2\right]\right]$$

Boson EM Field geometry

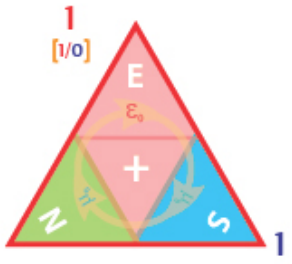
All Bosons have ODD Tetryonic EM mass geometries



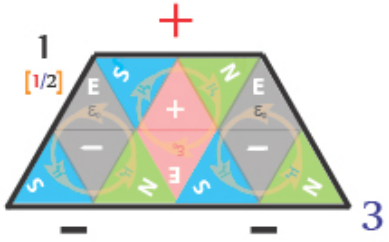
W- Negative Charge Carrier



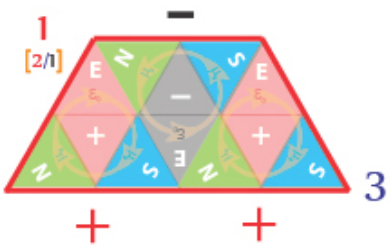
n =1,3,5,7,9,11,13,15,17,19,21, ...



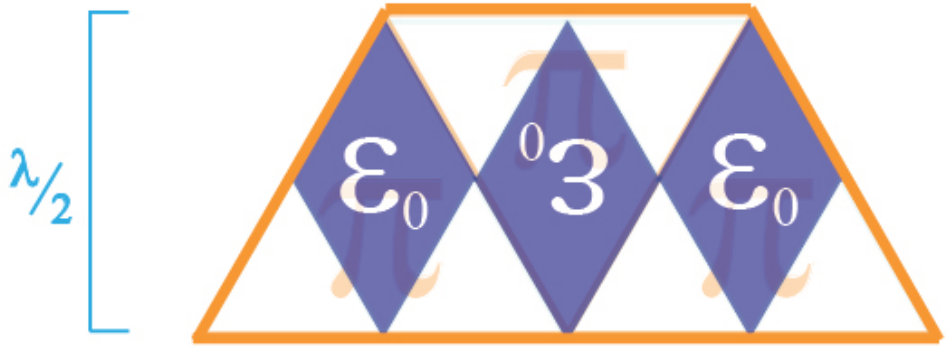
Positive Charge Carrrier W+



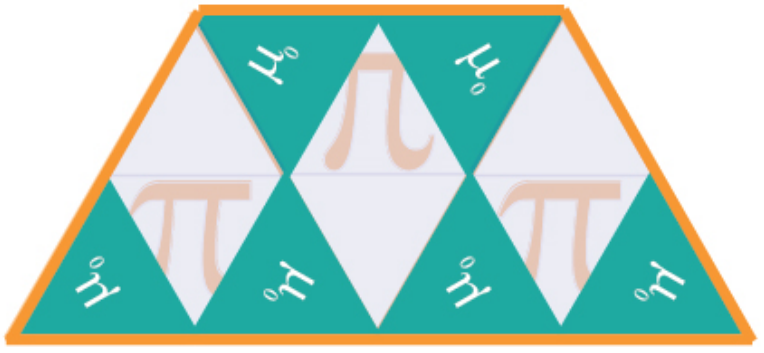
Bosons are Charge carriers
and form the basis for Quantum levels



ELECTRIC FIELD



MAGNETIC DIPOLE FIELD



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

$$\text{ODD}_{\text{Bosons}}\,\pi\left[\left[\varepsilon_0\mu_0\right]_{\text{EM Field}}.\left[mAv^2\right]_{\text{Planck quanta}}\right]$$

ElectroMagnetic · mass · velocity

W Bosons are comprised of
ODD number quanta

They are TRANSVERSE Charge carriers

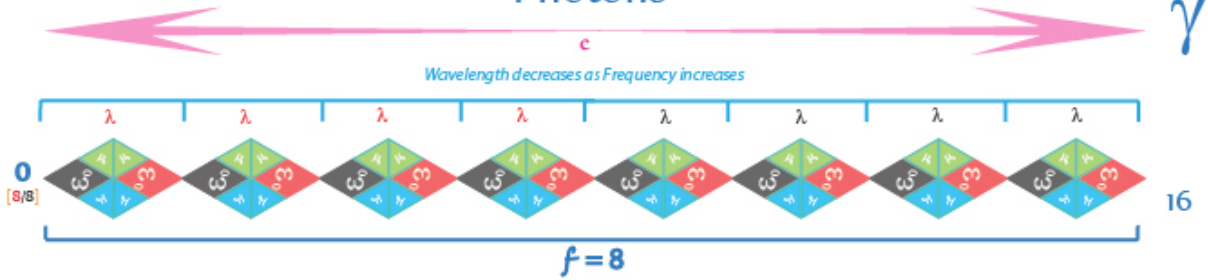
W Bosons

W+

$$n\pi\left[\left[mAv^2\right]_{\text{mass velocity}}\right]_{\text{Planck quanta}}$$

ODD #

Photons

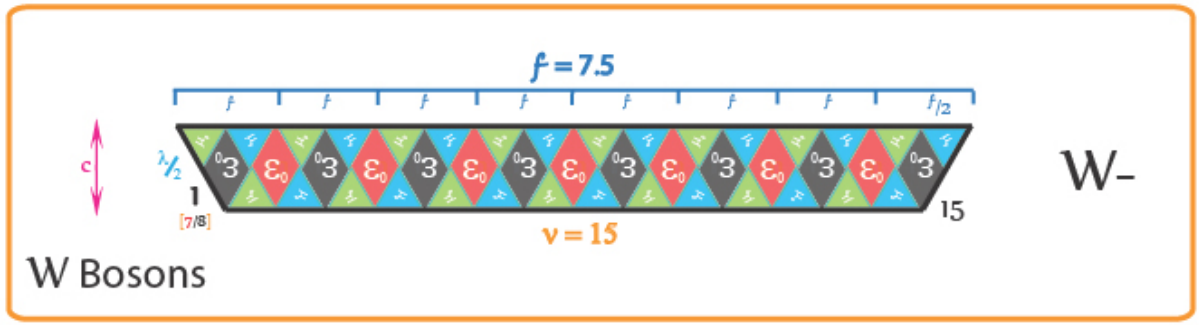


$$2\pi\left[\left[mAv^2\right]_{\text{mass QAM quanta}}\right]_{\text{Energy}}$$

EVEN #

Neutral Z BOSONS and PHOTONS
have differing EM geometries

They are LONGITUDINAL neutral
EM force carriers
resulting from Bosons



W-

$$n\pi\left[\left[mAv^2\right]_{\text{mass velocity}}\right]_{\text{Planck quanta}}$$

ODD #

EM waves are comprised of
EVEN number quanta [Photons]

$$\text{EVEN}_{\text{EM waves}}\,\pi\left[\left[\varepsilon_0\mu_0\right]_{\text{EM Field}}.\left[mAv^2\right]_{\text{Planck quanta}}\right]$$

ElectroMagnetic · mass · velocity

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
and
Charge transfer

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

All Bosons form
a single unit of charge

Positive charge carrier

+1

W+ ODD number quanta

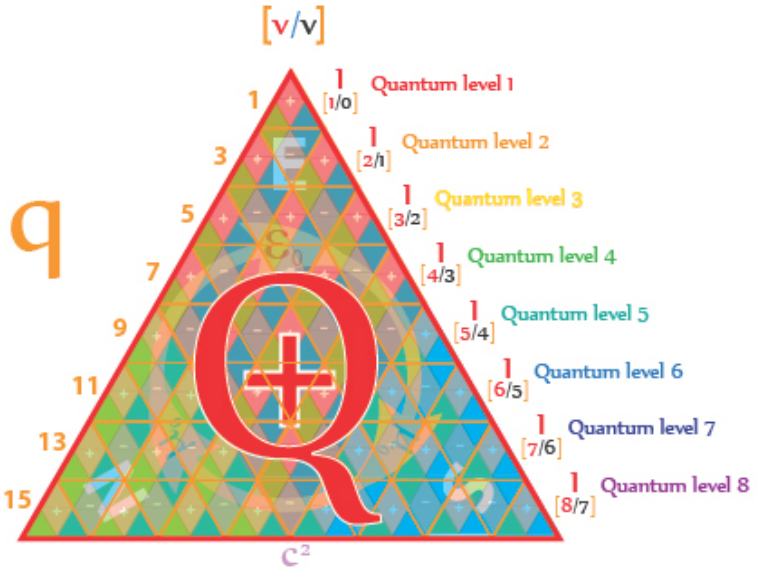
All charges are comprised of odd numbered Bosons

[each Boson is a Quantum level]

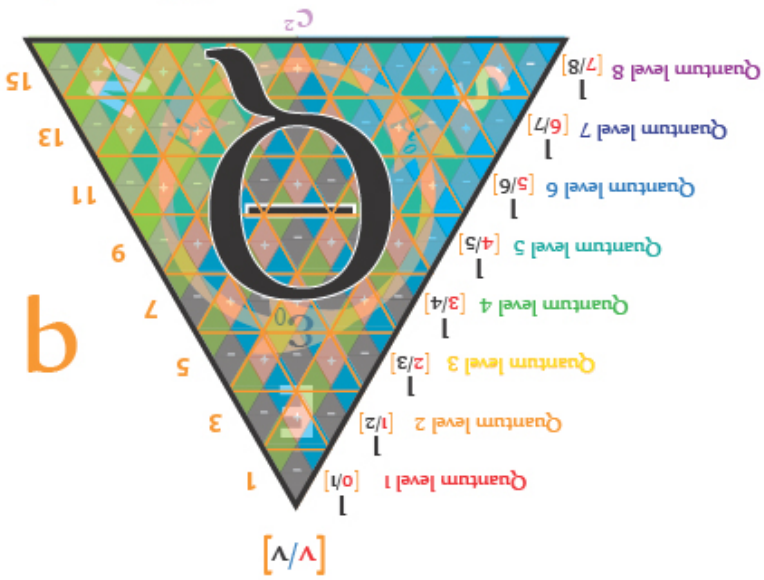
W− ODD number quanta

-1

Negative charge carrier

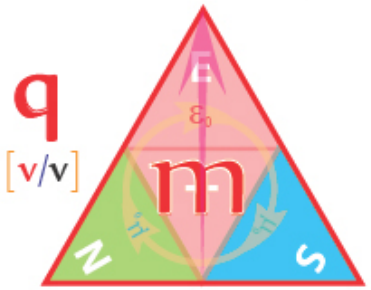


Multiple W Bosons form square Energy geometries
Separated Energy geometries create an electromotive force



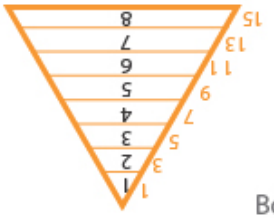
Bosons

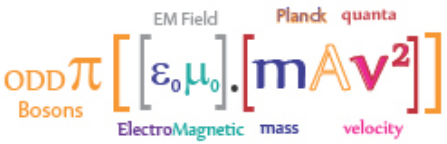
Each Quantum Level is
a Planck unit Charge

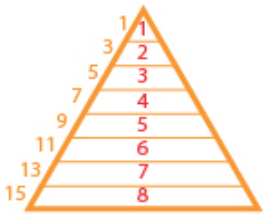


Positive Charges have nett
Positive quantised angular momenta

Positive Bosons







Bosons are the geometry of Quantum Levels

Negative Bosons

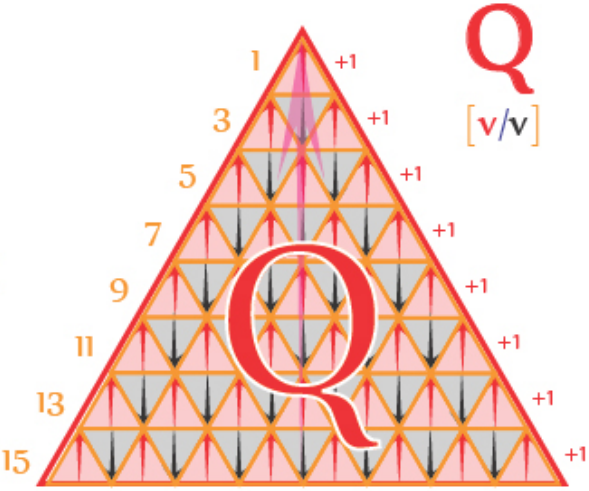
Negative Charges have nett
Negative quantised angular momenta

nett Charge

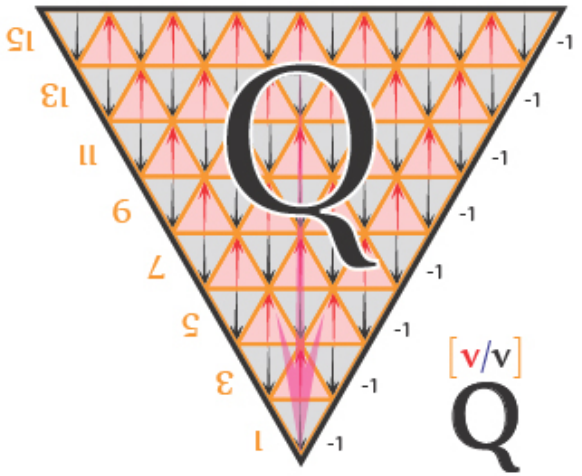
Charge is a result of the specific nett
quantum angular momentum geometry
in any given region of Space-time

Positive Charge field

**Bosons are
TRANSVERSE
EM fields [levels]**

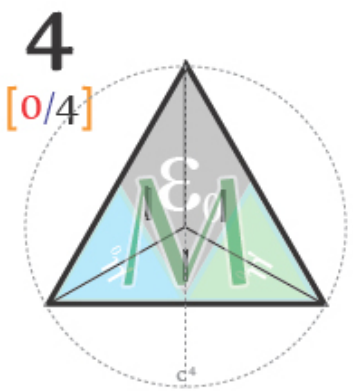


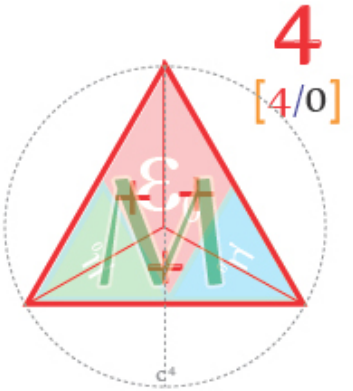
**nett Charge
is a SCALAR
EM field property**



Negative Charge field

Matter





EM masses have a planar geometry

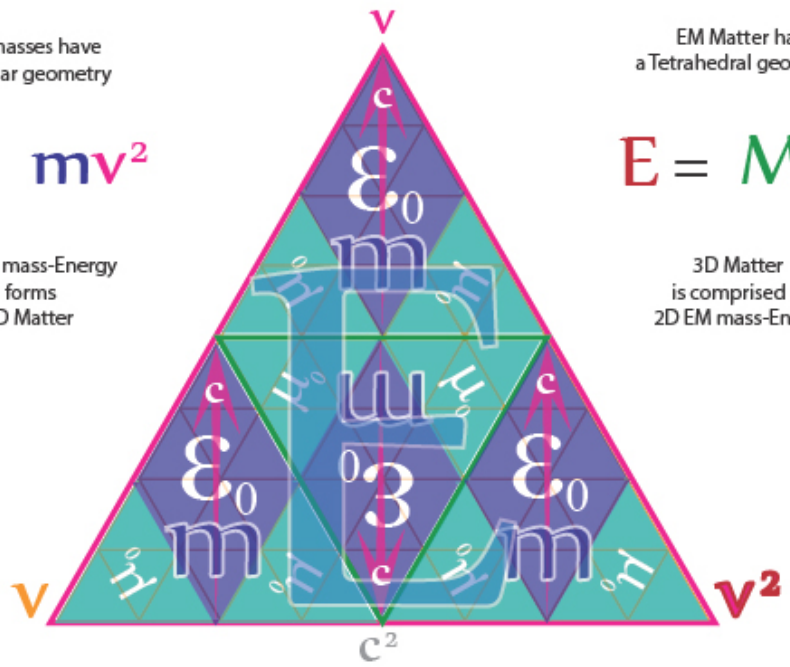
$E = mv^2$

2D EM mass-Energy forms 3D Matter

EM Matter has a Tetrahedral geometry

$E = Mc^4$

3D Matter is comprised of 2D EM mass-Energy



2D

EM mass-Energy per square metre

ρ

EM mass

m

kg/m^2

3D

EM mass-Energy per cubic metre

ρ

Matter

M

kg/m^3

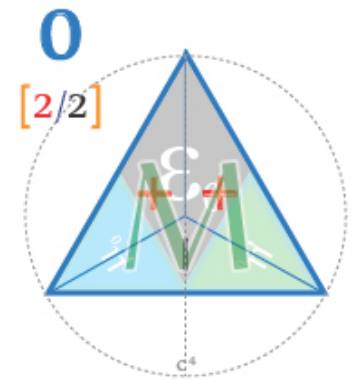
Matter is comprised of
4nπ EM mass-Energies in
a 3D Tetrahedral standing wave

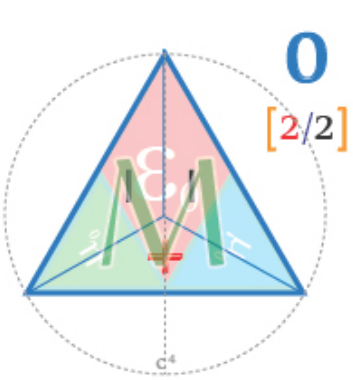
$$4\pi \left[\left[\varepsilon_0 \mu_0 \right] . \left[m A v^2 \right] \right]$$

4π Tetryons; $\varepsilon_0\mu_0$ ElectroMagnetic (EM Field); mAv^2 mass, velocity (Planck quanta)

Tetryonic Matter is anything that has mass-Energy and occupies 4nπ volumes
(the 3D massive building blocks of quantum particles and atomic elements)

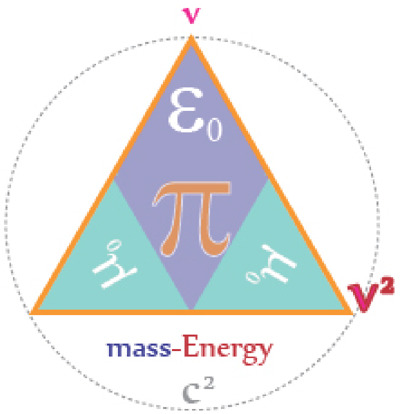
Matter exhibits both wave-like and particle-like properties, the so-called wave–particle duality
{de Broglie wavelength & Compton frequency}





Tetryons

4 fascia Matter quanta



ZPF

mass-Energy Quantum

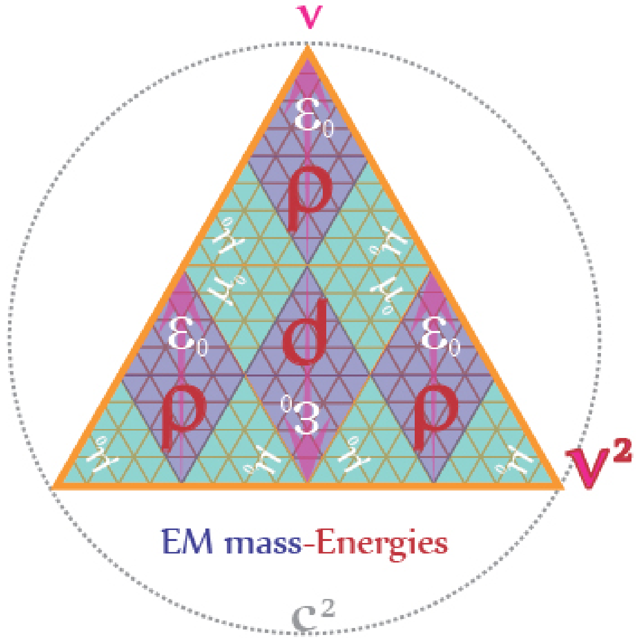
m

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

$$n\pi\left[[\varepsilon_0\mu_0].[mAv^2]\right]$$

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

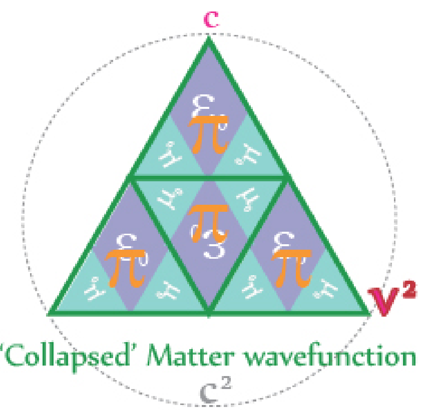
2D EM mass-Energy waveforms can be combined to form 3D EM mass-Energy-Matter particles



$$4n\pi\left[[\varepsilon_0\mu_0].[mAv^2]\right]$$

(Matter; EM Field; Planck; quanta; ElectroMagnetic; mass; velocity)

Platonic Tetrahedrals (Tetryons) are the foundational geometry of all 3D Matter



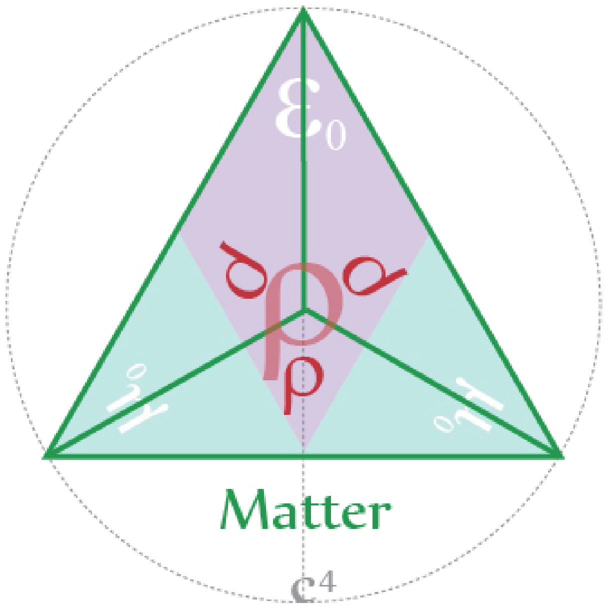
Tetryon

Matter Quantum

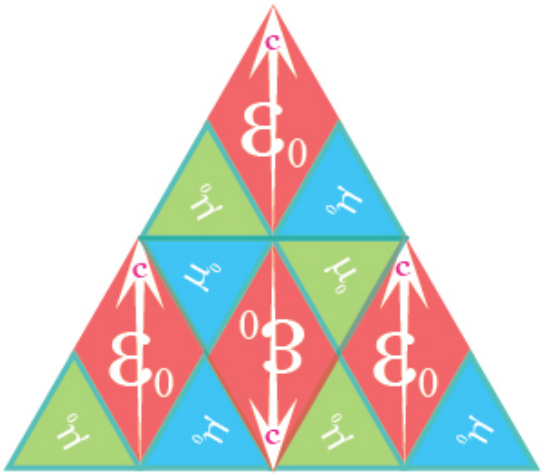
M

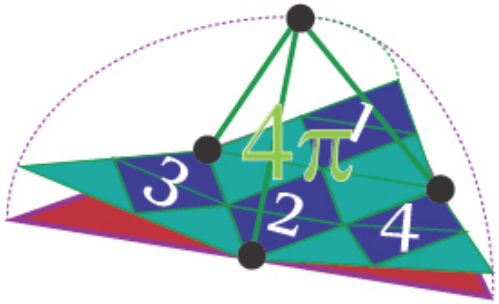
A Tetryon is a 4 fascia standing waveform forming a 4π Tetrahedral geometry

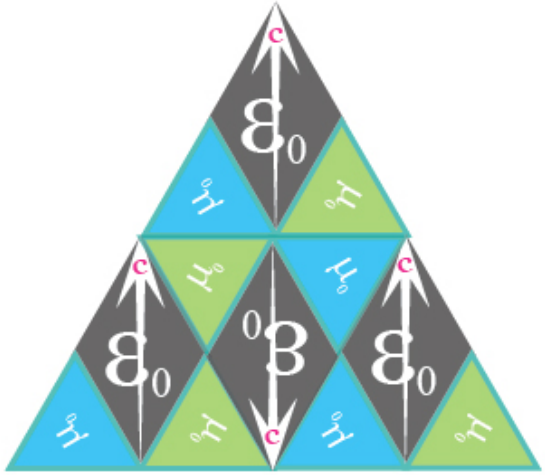
(2 orthagonally opposed inductive circuits)



MATTER
standing WAVE geometry



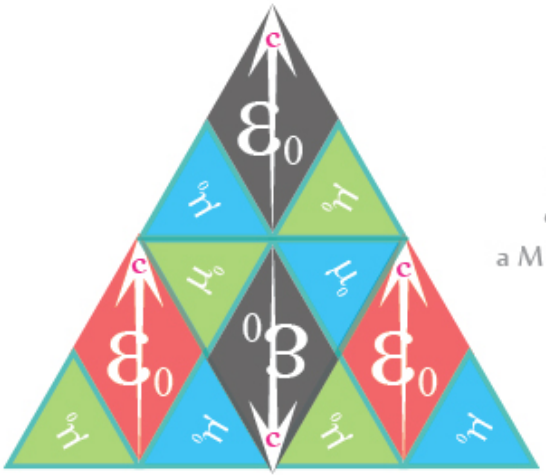




EM Field Planck quanta

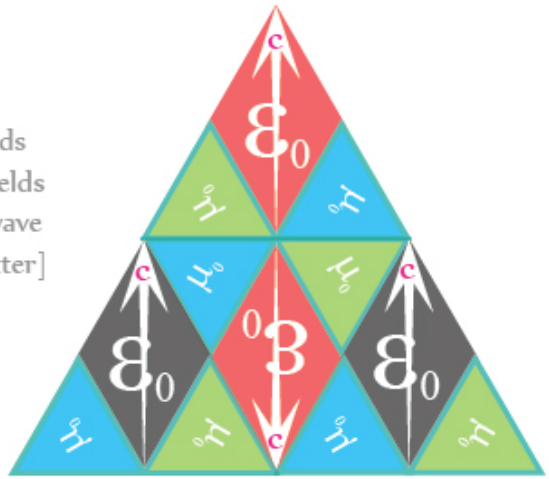
$4\pi \left[\left[\varepsilon_0 \mu_0 \right] . \left[mAv^2 \right] \right]$

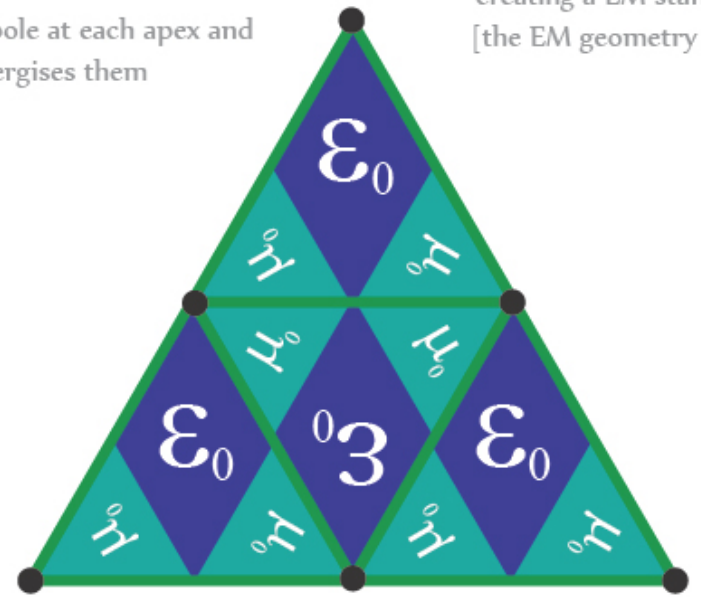
Tetryons ElectroMagnetic mass velocity



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

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



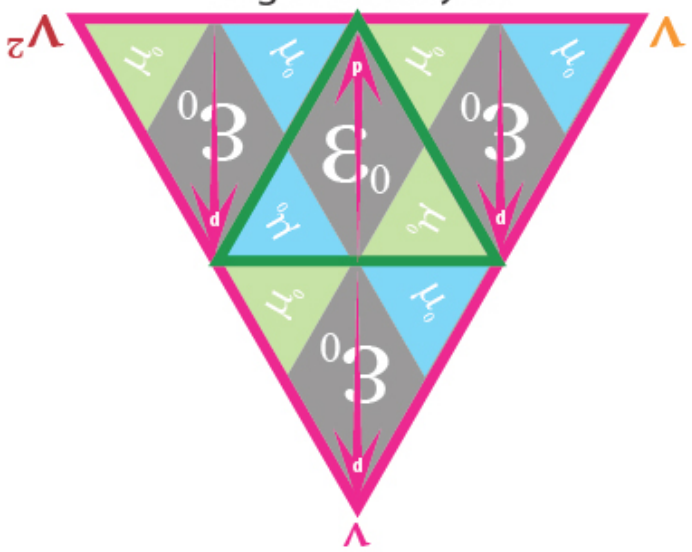


All EM waves propagate
at the natural speed of Energy
[c] along their E fields

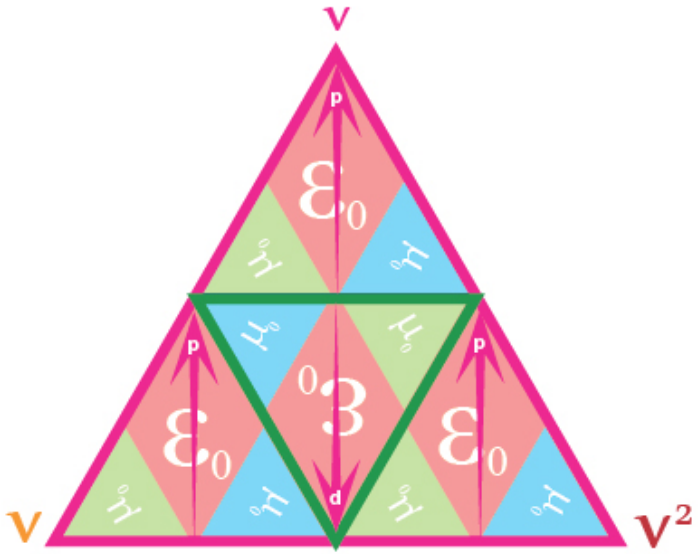
Matter stores
EM wave energies
in a Tetrahedral geometry

Tetryon Charge Geometry

Negative Tetryon

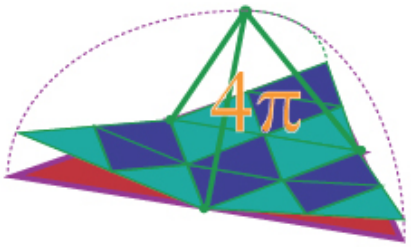


A 3D Tetryon can 'collapse' into a 2D EM waveform generating a Four Energy-Momenta waveform that conserves all of the mass-Energy-momenta



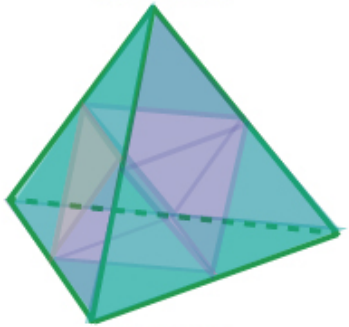
Positive Tetryon

TETRYONS



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)

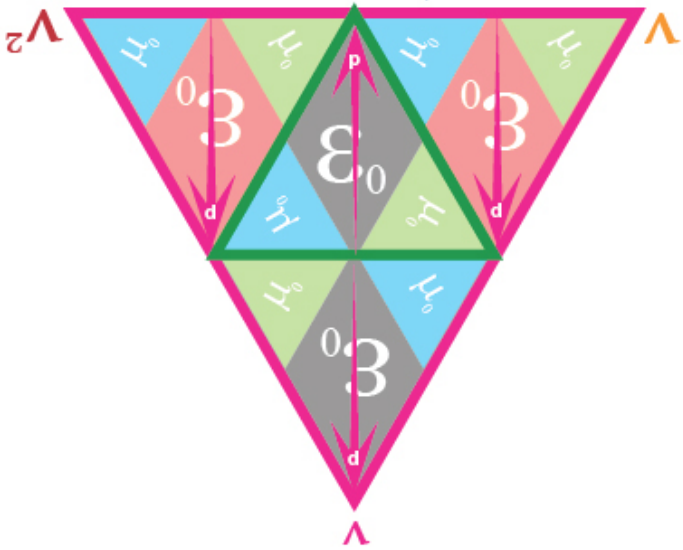
TETRYONS



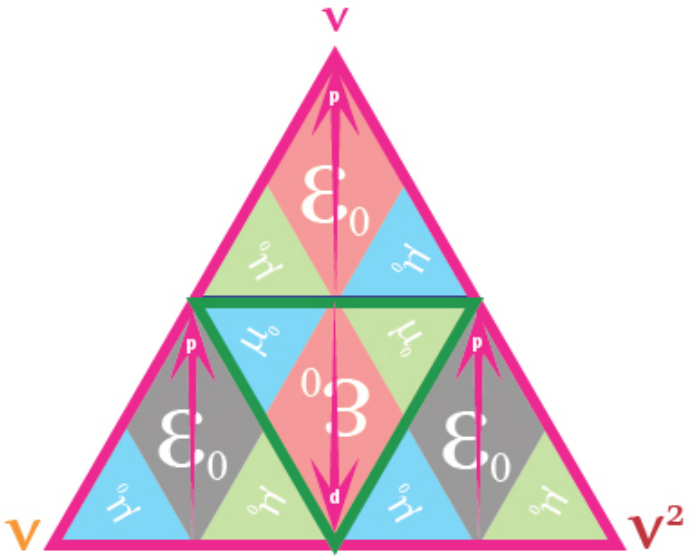
[MATTER]

Four 2D charge ZPF geometries combine to form 3D Tetrahedral Matter

Neutral Tetryon



The 3D Tetryonic volume of Matter is what distigushes it from 2D EM mass-Energy



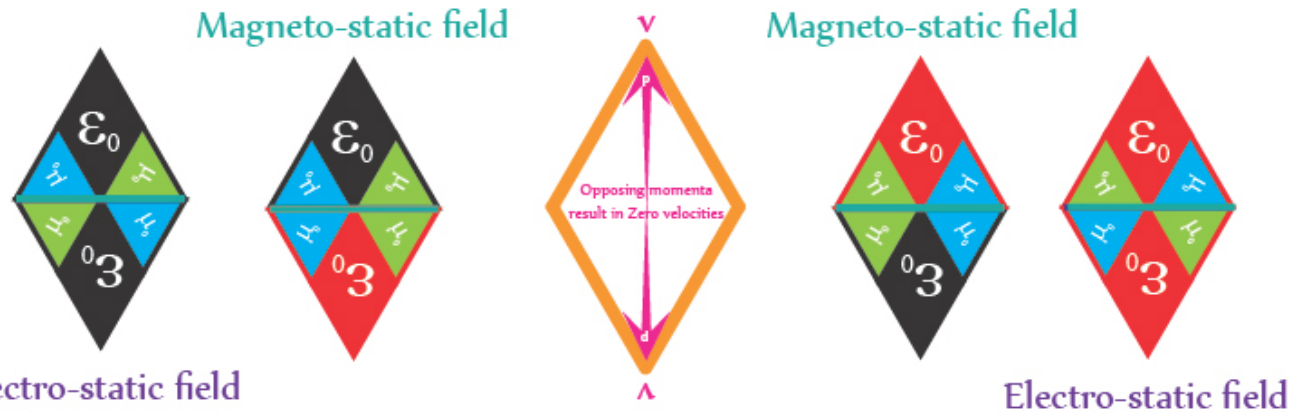
Neutral Tetryon

Tetryon Genesis

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

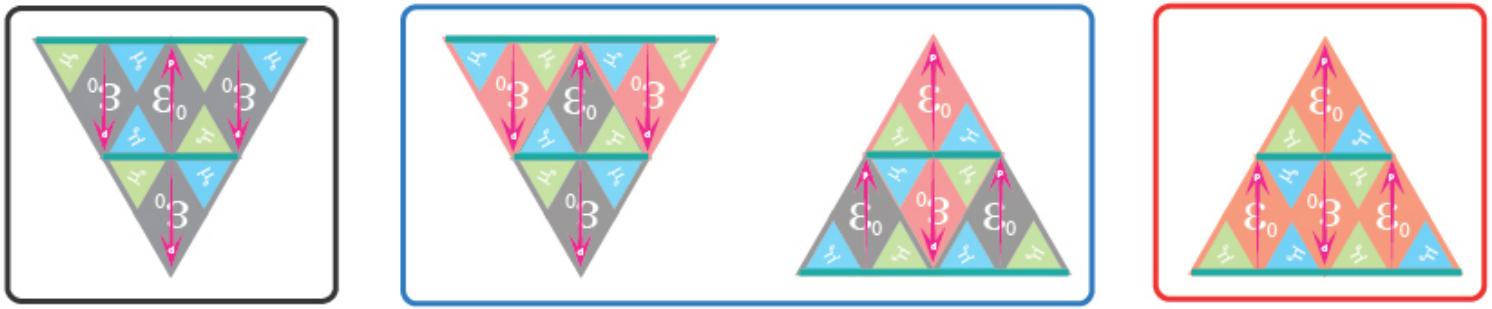
1π
EM mass-Energies

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



2. 2D EM mass-Energies
'fold/curve' into
3D Matter geometries

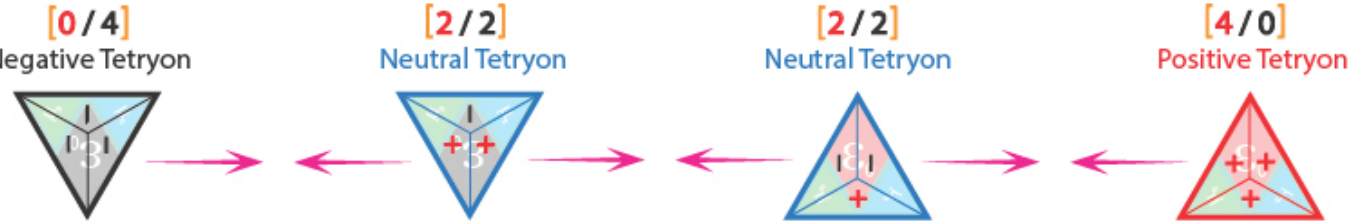
4π
Matter



EM wave momenta
form standing waves
in Matter geometries

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

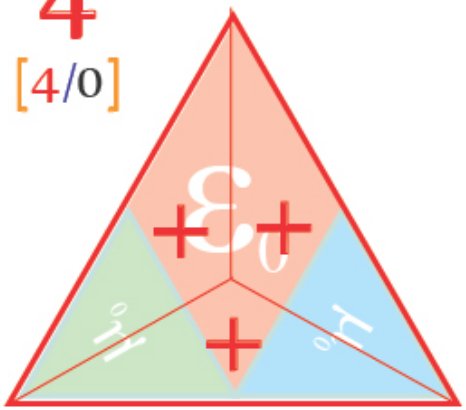
$4n\pi$
Nuclei

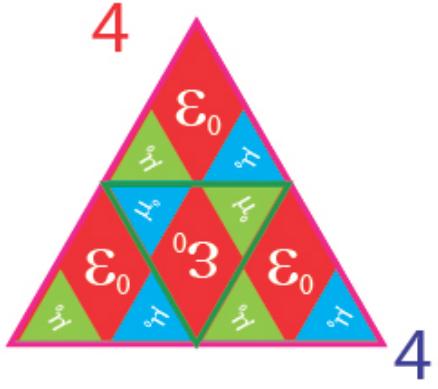


All Tetryonic charges seek equilibrium

Positive Tetryon

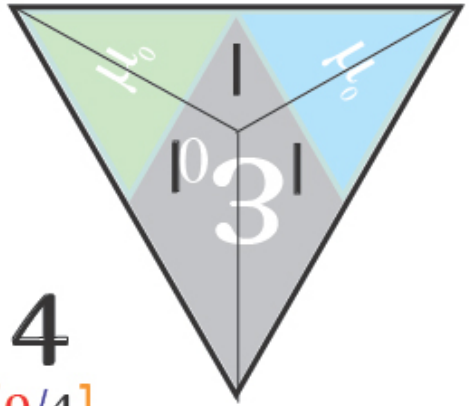
[4/0]

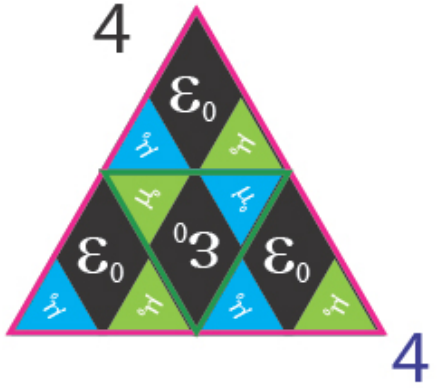


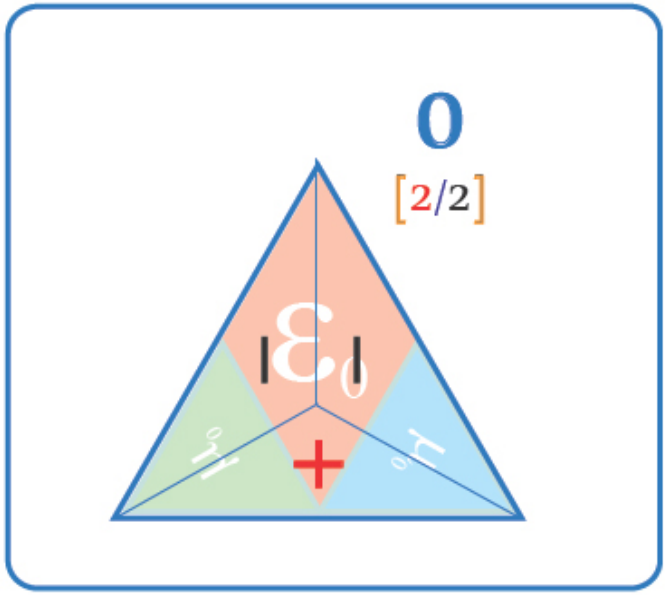


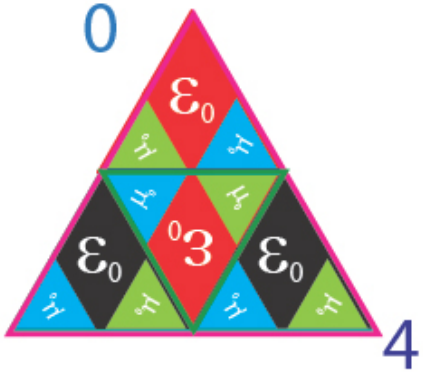
Negative Tetryon

[0/4]

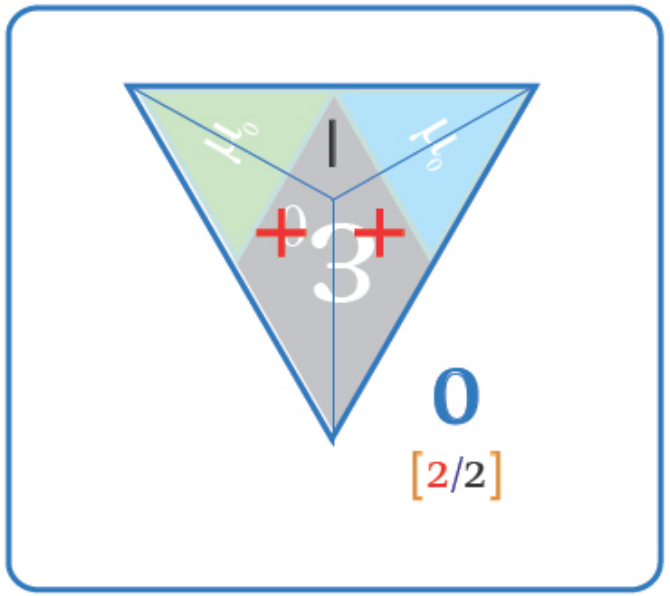


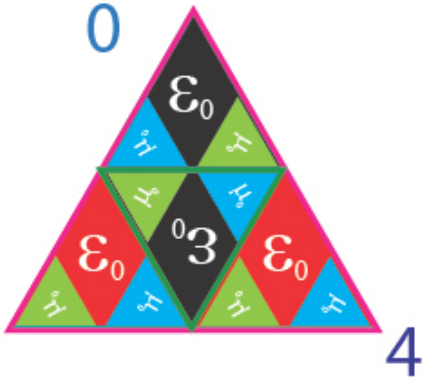






Neutral Tetryons





Tetryons

- - - -

- + - +

$$M_{\text{Matter}} = 4\pi\left[\left[\varepsilon_0\mu_0\right].\left[mAv^2\right]\right]$$

EM Field · Planck · quanta · ElectroMagnetic mass · velocity

$$E = mc^2$$

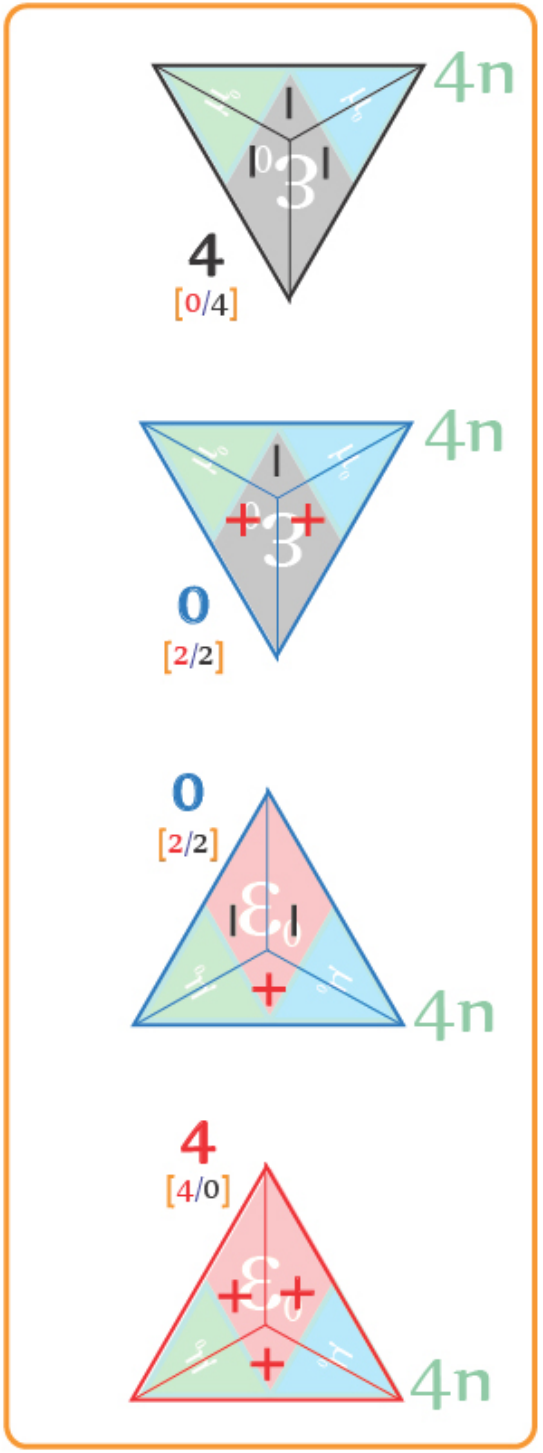
Matter is 4nπ standing wave
EM mass-Energy geometries
propagating at c

+ - + -

$$E = 4\pi\left[\left[mAv^2\right]\right]$$

Planck · quanta · mass · velocity

+ + + +



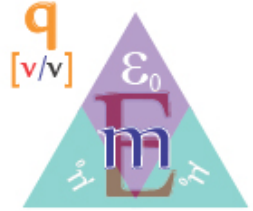
TETRYONIC

mass-ENERGY-Matter

$$n\pi\left[\left[\varepsilon_0\mu_0\right].\left[mAv^2\right]\right]$$

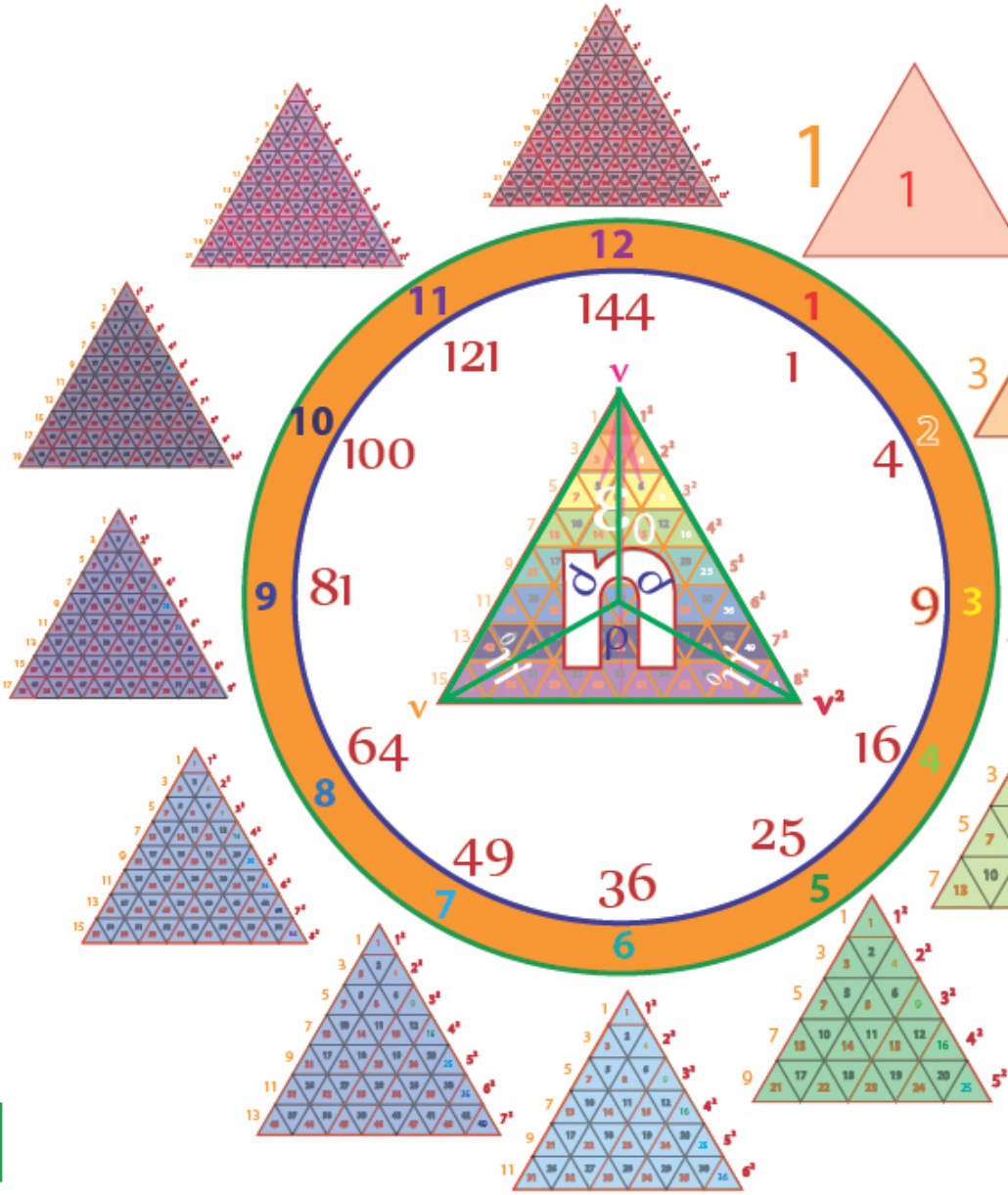
mass — EM Field — Planck quanta — ElectroMagnetic — mass — velocity

ALL EM masss-ENERGY-Matter has Equilateral geometry



2D mass-Energies form 3D Matter

Tetryonic Matter is the building block of Fermions, Baryons and Elements



Transverse EM mass-Energies form Bosons [Quantum levels]

Longitudinal EM mass-Energies form Photons

Bosons combine to form SQUARE scalar EM energies

massless is a scientific misnomer

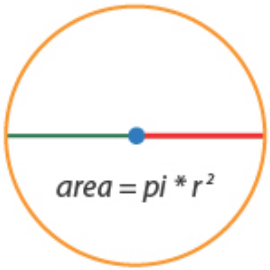
2D [non-Tetrahedral] EM mass-ENERGY is 'Matterless'

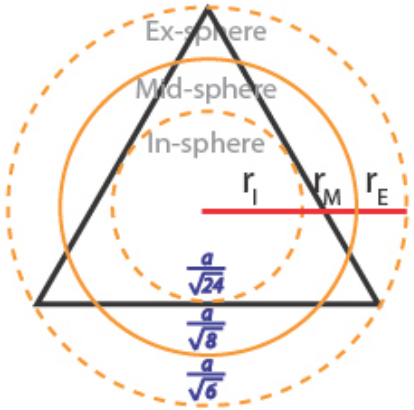
$$T\pi\left[\left[\varepsilon_0\mu_0\right].\left[mAv^2\right]\right]$$

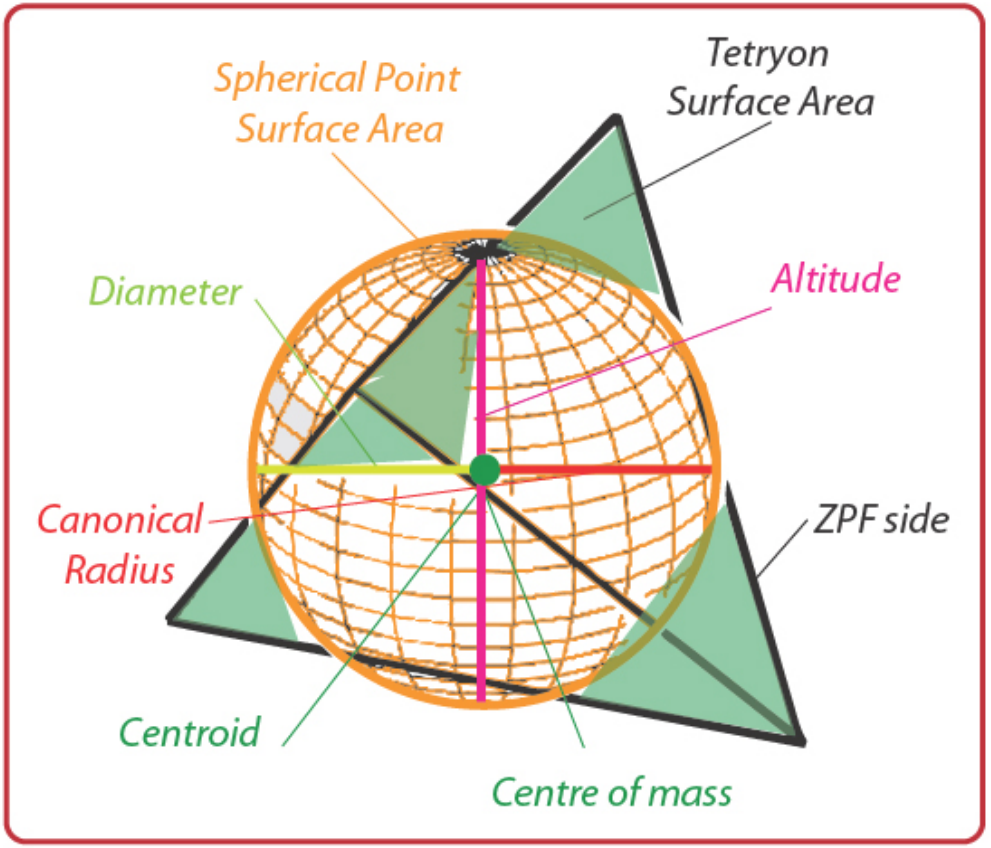
Matter — EM Field — Planck quanta — ElectroMagnetic — mass — velocity

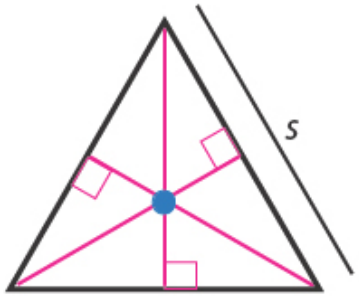
Spheres vs. Tetryons

Tetrahedral midsphere radius = $\frac{a}{\sqrt{8}}$



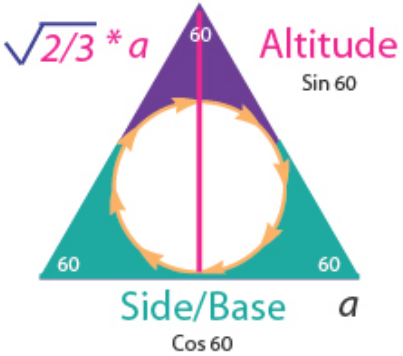


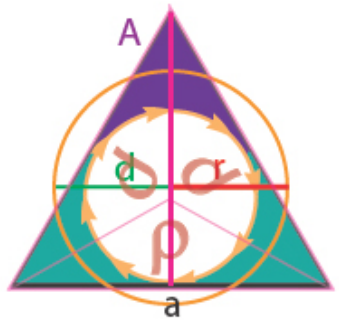




area = $\sqrt{3/4} * a^2$

ZPF fascia





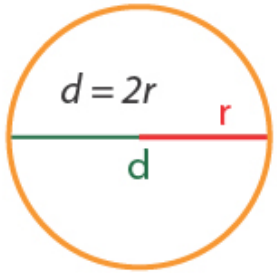
Area Tetryon

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

Vertex curvature = π

Total curvature = 4π

Sphere



Area sphere= 4π r²

Surface curvature = 1/r²

Total curvature = 4π

A Sphere and Tetrahedron are both Platonic solids with 3D volume and 4π Gaussian surface curvatures [Gauss-Bonnet theorem]

Fermions

Fermions are all 12π geometry particles

$12\pi\left[\left[\varepsilon_0\mu_0\right].\left[mAv^2\right]\right]$

12π Fermions · [ε₀μ₀] ElectroMagnetic · [mAv²] EM Field · Planck quanta · mass · velocity

Anti-STRANGE Quark

u c t

Anti-BOTTOM Quark

Anti-T Neutrino

12 [12/0]

Positron

e+

Muon

Tau

+1

Tau

+2/3

Electron Neutrino

Anti-μ Neutrino

Anti-UP Quark

$\bar{u}$ $\bar{c}$ $\bar{t}$

$\bar{\nu}_e$ $\bar{\nu}_m$ $\bar{\nu}_t$

Quark

Lepton

-1/3

STRANGE Quark

Positron Neutrino

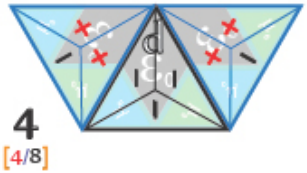
Anti-μ Neutrino

-2/3

DOWN Quark

CHARMED Quark

d s b



μ Neutrino

e

Muon

Tau

0

BOTTOM Quark

Anti-UP Quark

+1/3

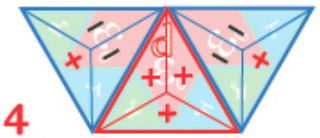
Anti-DOWN Quark

Anti-DOWN Quark

ν_e ν_m ν_t

T Neutrino

$\bar{d}$ $\bar{s}$ $\bar{b}$



Anti-TOP Quark

Electron

-1

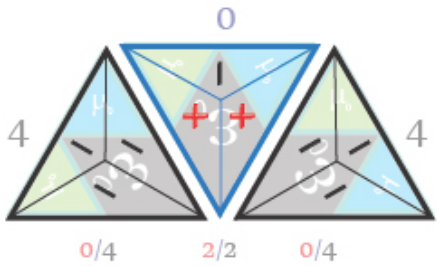
e

TOP Quark

UP Quark

Anti-CHARMED Quark

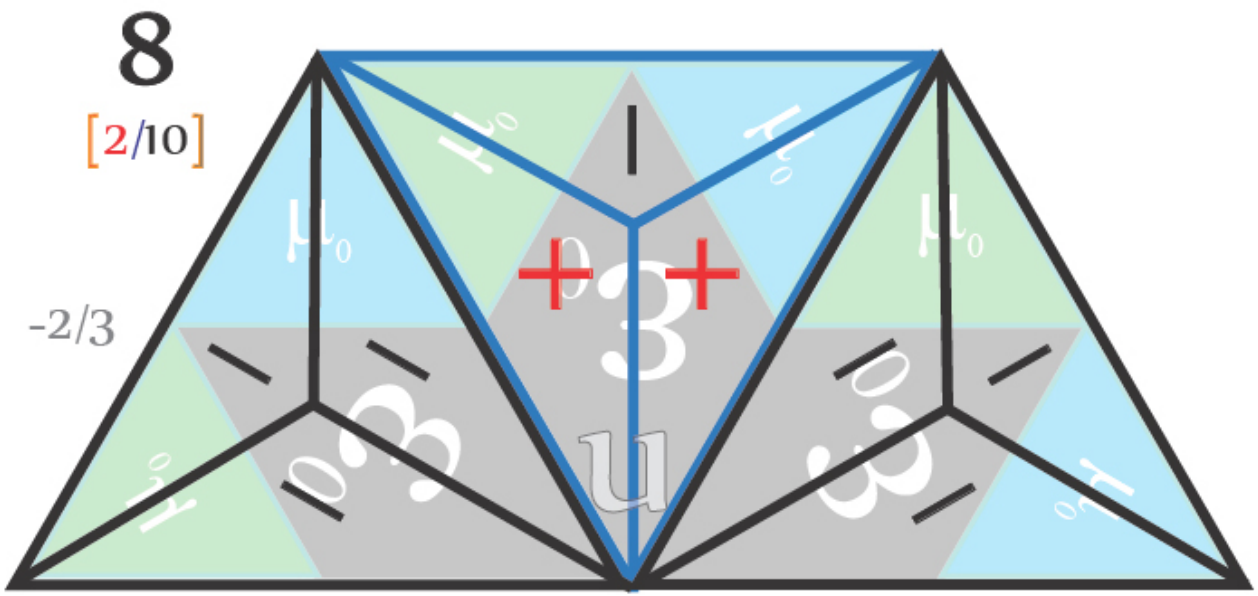
anti-UP quark



$$12\pi\left[\left[\varepsilon_0\mu_0\right].\left[mAv^2\right]\right]$$

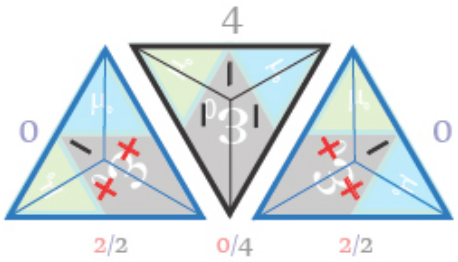
Fermions · EM Field · Planck · quanta · ElectroMagnetic · mass · velocity

1. UP anti-quark
2. Charmed anti-quark
3. Top anti-quark



12 Charged Fascia geometry
2 Positive
10 Negative
Nett Charge of 8 [-2/3 elementary charge]

Down Quark

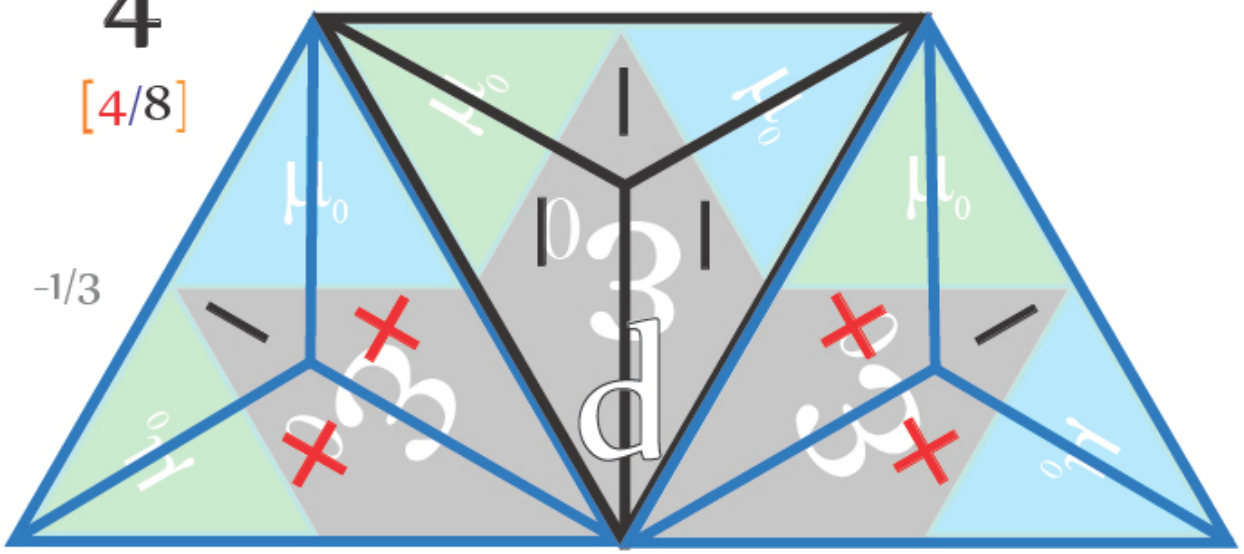


$$12\pi \text{ Fermions } \left[\left[\varepsilon_0\mu_0\right].\left[mAv^2\right]\right]$$

EM Field — ElectroMagnetic; Planck quanta; mass; velocity

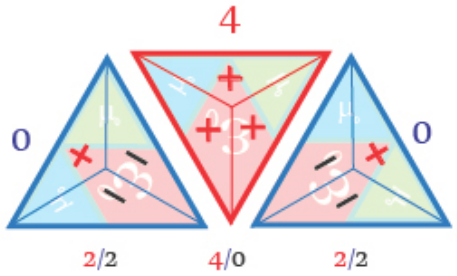
d

1. DOWN quark
2. Strange quark
3. Bottom quark



12 Charged Fascia geometry
4 Positive
8 Negative
Nett Charge of 4 [-1/3 elementary charge]

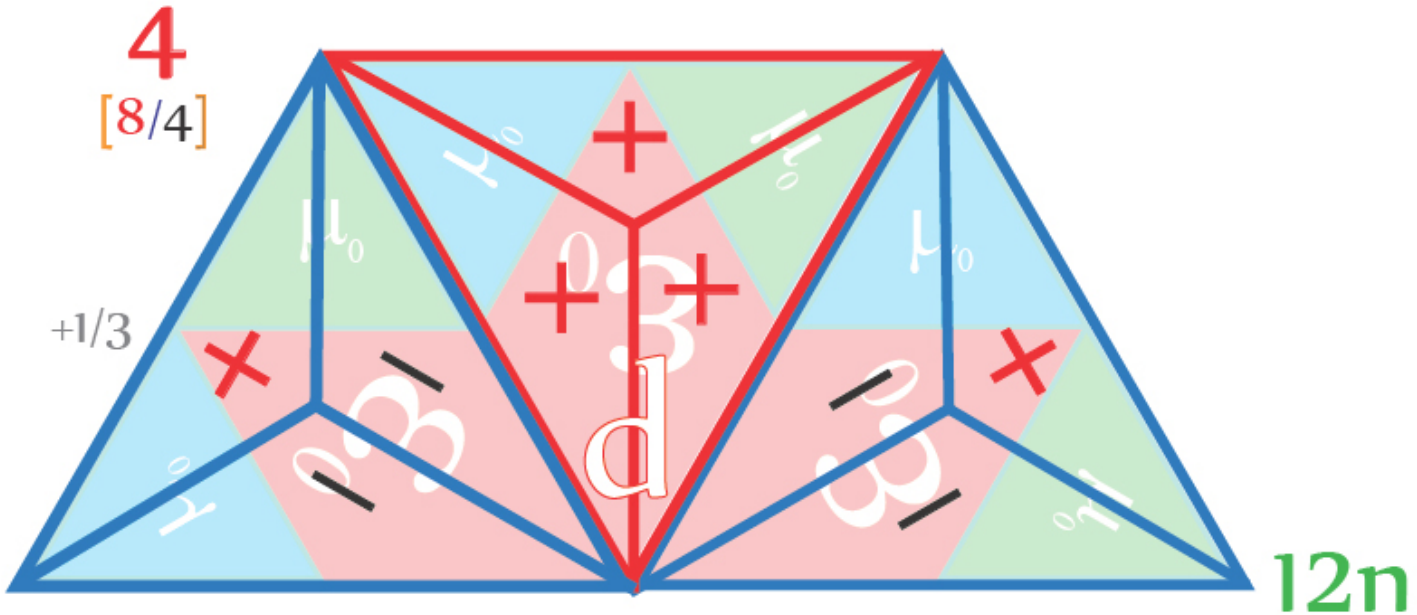
anti-Down quark



$$12\pi\left[\left[\varepsilon_0\mu_0\right].\left[mAv^2\right]\right]$$

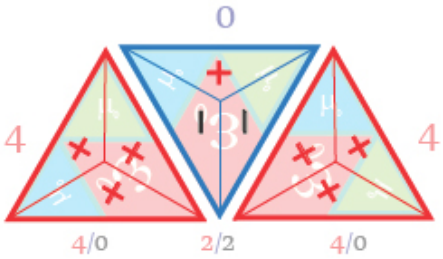
Fermions · EM Field · ElectroMagnetic · Planck quanta · mass · velocity

1. DOWN anti-quark
2. Strange anti-quark
3. Bottom anti-quark



12 Charged Fascia geometry
8 Positive
4 Negative
Nett Charge of 4 [+1/3 elementary charge]

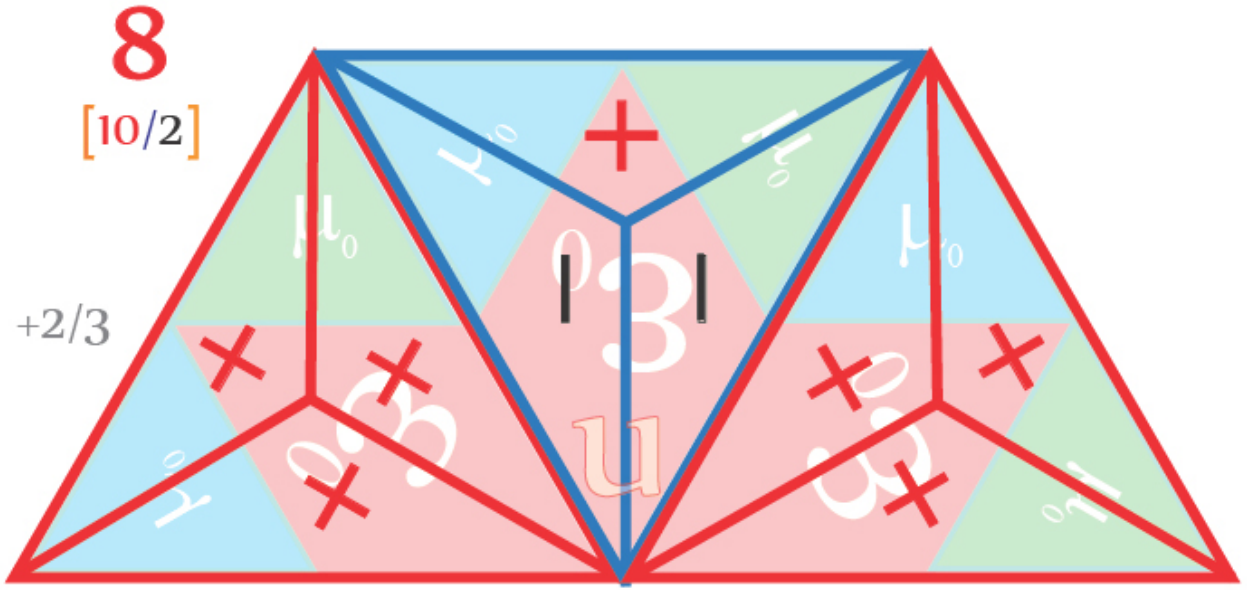
UP Quark



$$12\pi \left[\left[\varepsilon_0 \mu_0 \right] . \left[m \mathbb{A} v^2 \right] \right]$$

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

1. UP quark
2. Charmed quark
3. Top quark



12 Charged Fascia geometry
10 Positive
2 Negative
Nett Charge of 8 [+2/3 elementary charge]

Charged EM Field Planck quanta

$T\pi\left[\left[\varepsilon_0\mu_0\right].\left[mAv^2\right]\right]$

Matter ElectroMagnetic mass velocity

Tetryonic charge geometry
determines particle families

FERMIONS

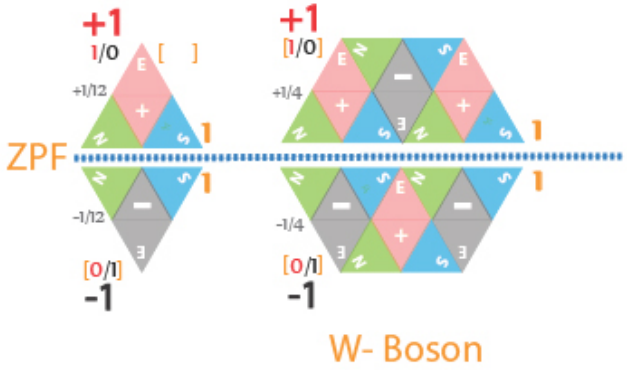
Quarks and Leptons are all 12π geometries
[differentiated by their nett charges and interactions]

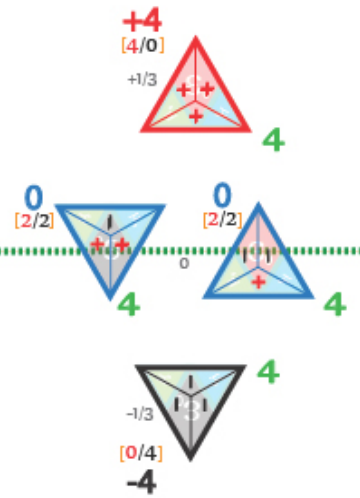
TETRYONS

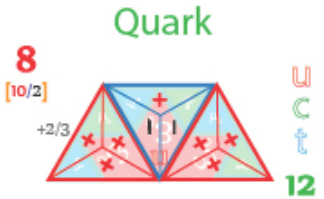
Tetryons are the quanta of Matter

BOSONS

ZPFs are single quanta Bosons







2D mass-Energies

EM Field Planck quanta

$n\pi_{mass}\left[\left[\varepsilon_0\mu_0\right].\left[mAv^2\right]\right]$

ElectroMagnetic mass velocity

Tetryonic EM energy levels
determine particle masses

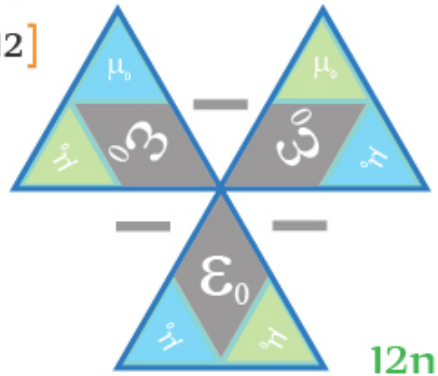
All Matter particles
are comprised of Bosons

3D mass-Energy-Matter

Electron

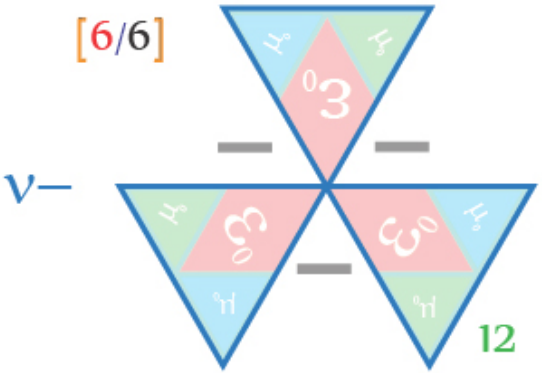
12

[0/12]



0

[6/6]



electron Neutrino

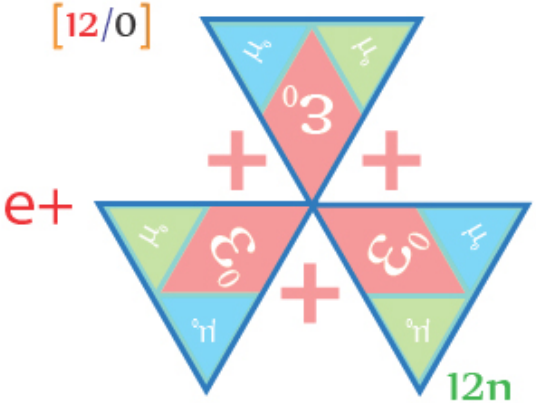
12π

Repulsive Tetryonic Charges
forms the geometry of all Leptons

Positron

12

[12/0]



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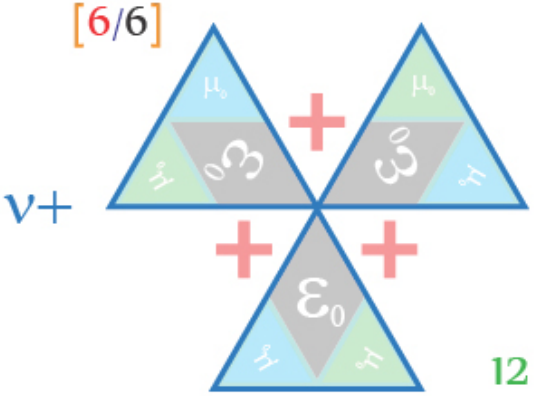
[6/6]



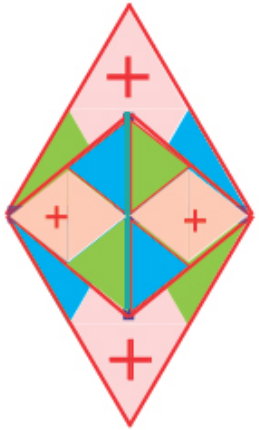
positron Neutrino

Charged Leptons

positron

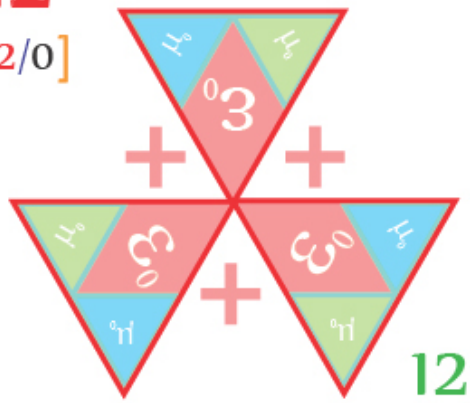
e+

12



12

[12/0]



12n

1. Positron
2. anti- Muon
3. anti-Tau

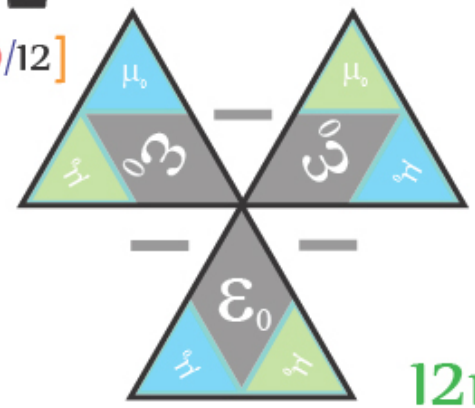
Electrons and Positrons are identical save
their magnetic dipole geometry and external fascia charges

e-

12

12

[0/12]

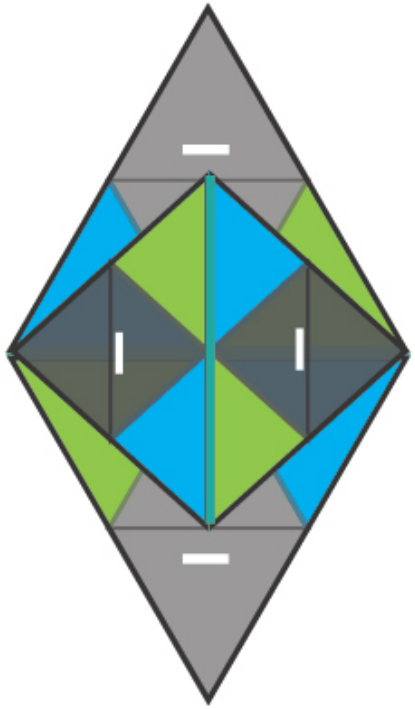


12n

1. Electron
2. Muon
3. Tau

electron

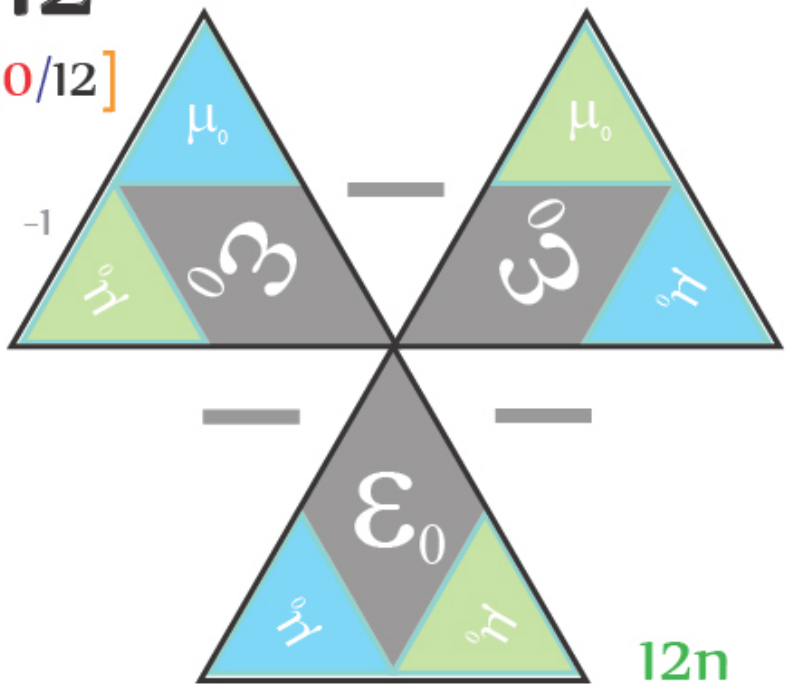
Electron



12

[0/12]

−1



$12\pi\left[\left[\varepsilon_0\mu_0\right].\left[mAv^2\right]\right]$

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

1. Electron
2. Muon
3. Tau

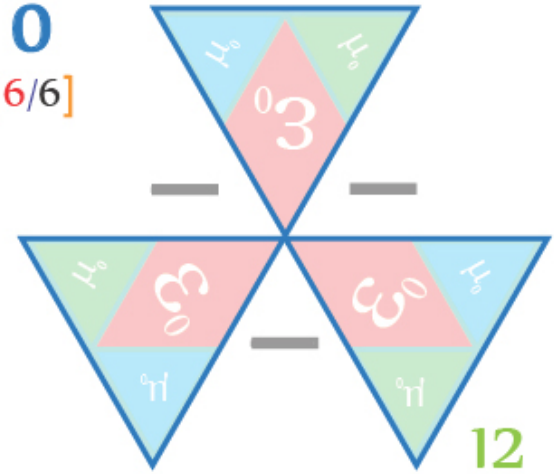
Neutral Leptons

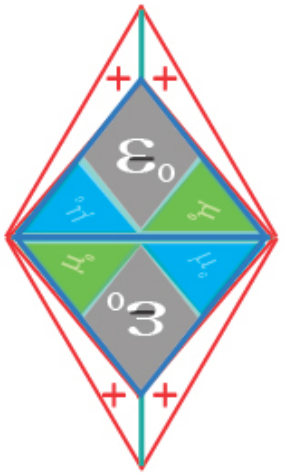
$12\pi\,[[\varepsilon_0\mu_0].[mAv^2]]$

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

ν-
0

0
[6/6]



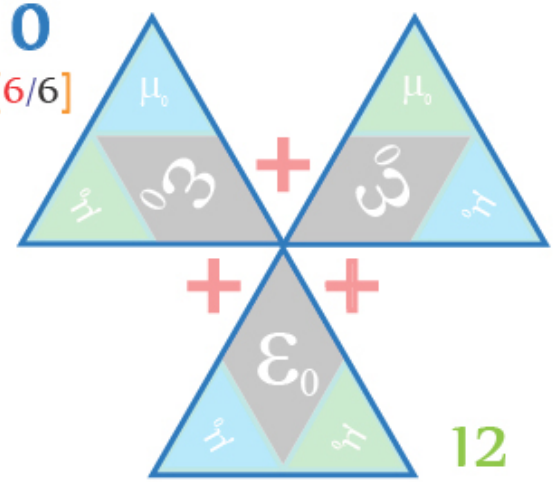


1. Electron Neutrino
2. Mu Neutrino
3. Tau Neutrino

Neutrinos and Anti-neutrinos are identical save
their magnetic dipole geometry and external fascia charges

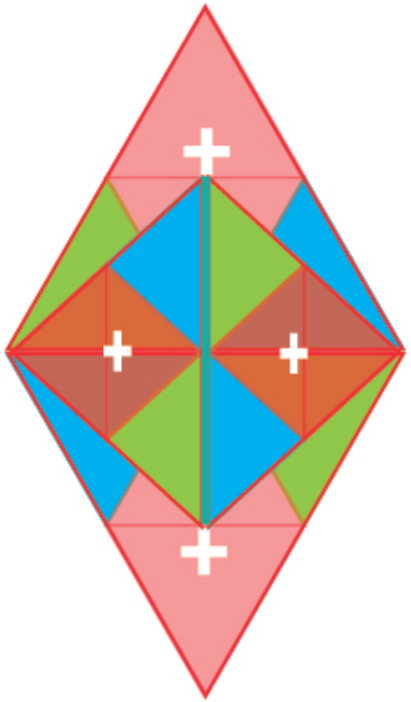
ν+
0

0
[6/6]



1. Positron Neutrino
2. anti- Mu Neutrino
3. anti-Tau Neutrino

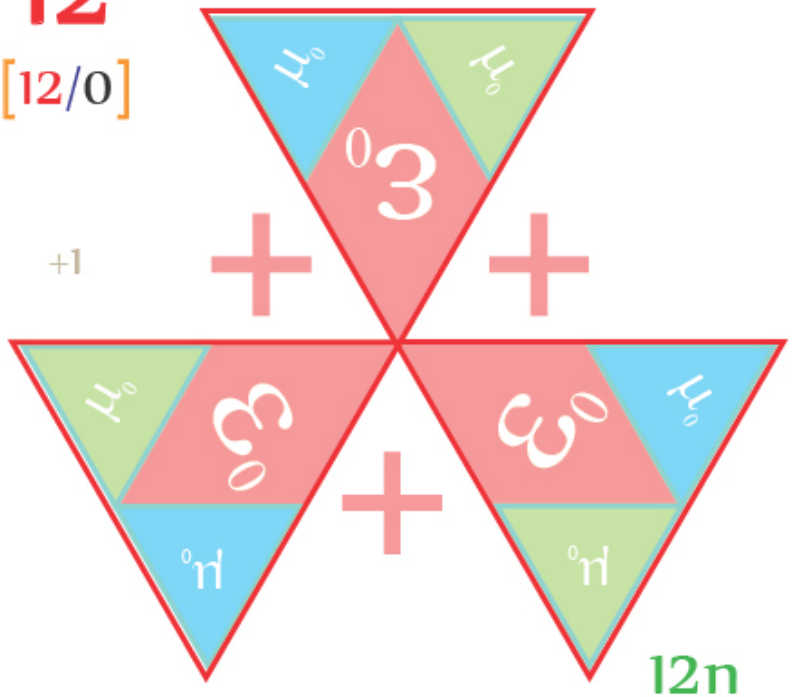
Positron



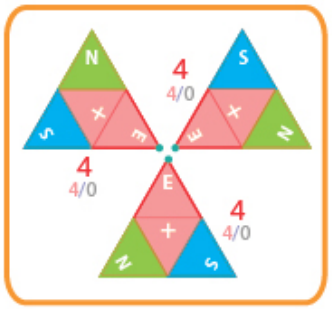
12

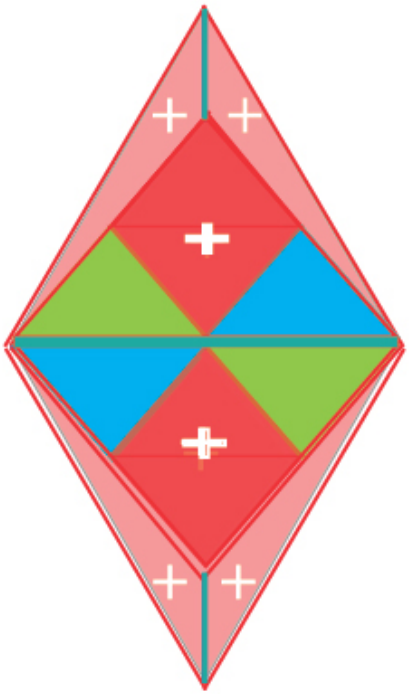
[12/0]

+1



12n





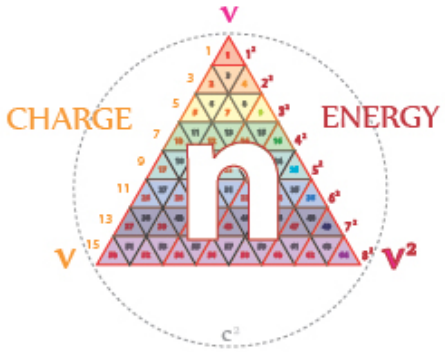
$$12\pi\left[\left[\varepsilon_0\mu_0\right].\left[mAv^2\right]\right]$$

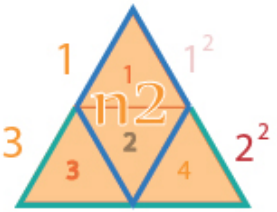
Fermions — EM Field: ElectroMagnetic — Planck quanta: mass, velocity

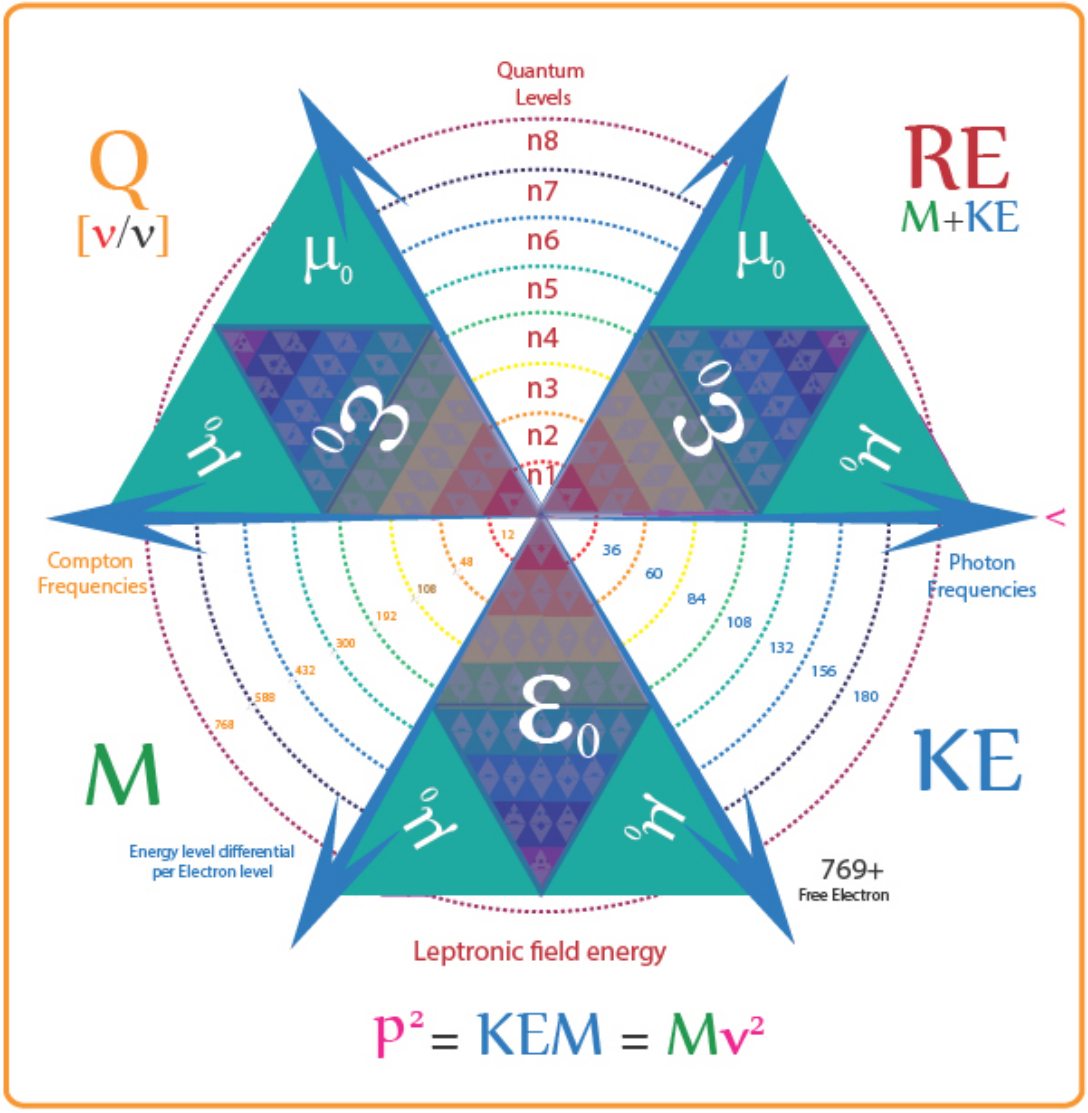
1. Positron
2. anti-Muon
3. anti-Tau

Leptronic Quantum levels

[KEM field geometry]







Illustrative schema only: All Leptonic quantum levels have the same KEM geometry

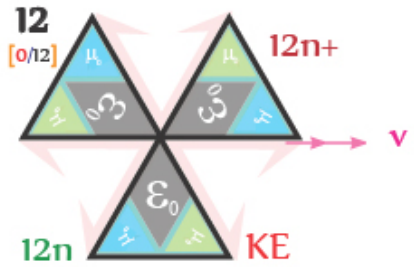
v² Total quanta	n Electron quantum level
1.2e20	1
4.8e20	4
1.08e21	9
1.92e21	16
3.00e21	25
4..32e21	36
5.88e21	49
7.68e21	64

1e19

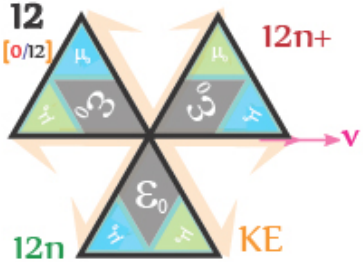
Electron Energy Levels

All Tetryonic geometries [EM fields & Matter]
absorb and release energy exponentially
in Quantum steps

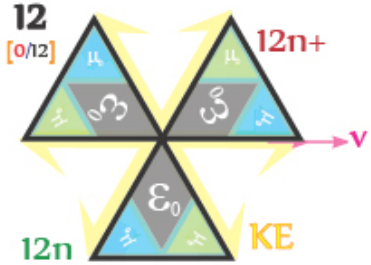
n1



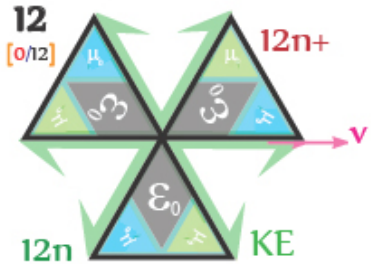
n2

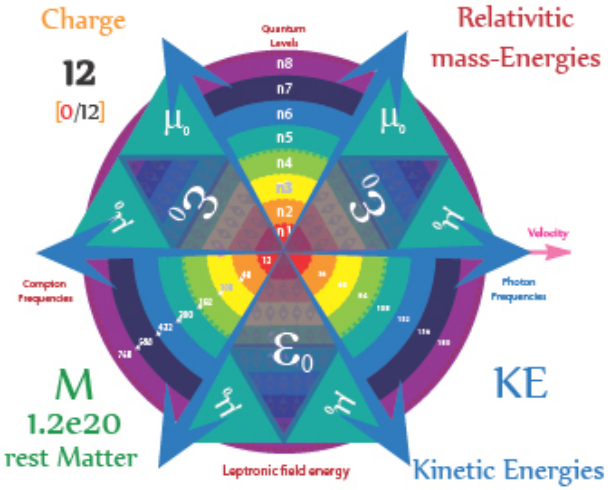


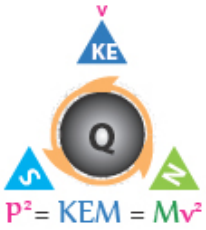
n3



n4

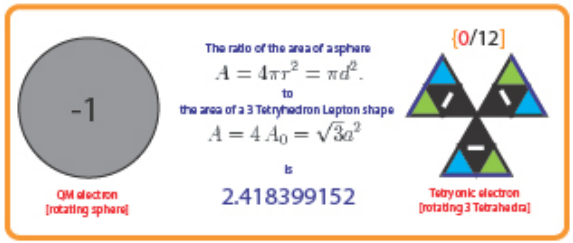






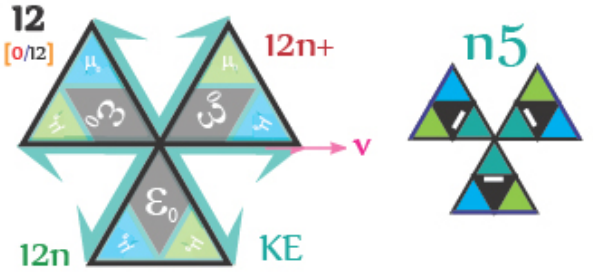
$P^2 = KEM = Mv^2$

As the total Energy content of particles increases
the Quantum levels increase as well,
in turn this is reflected in the associated
Compton Frequencies and deBroglie wavelengths

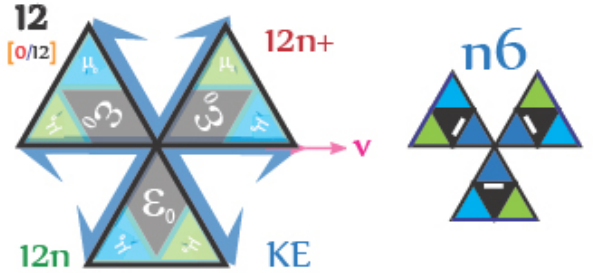


The spherical model of an electron
is erroneous

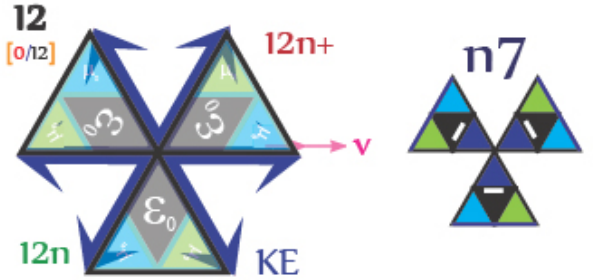
n5



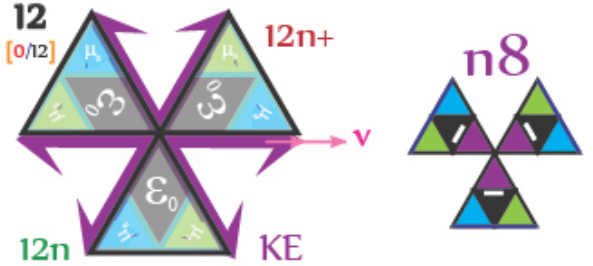
n6



n7



n8



Leptronic Kinetic EM Fields

12 [0/12] n1

12n 12

12 [0/12] n2

24 12n

12 [0/12] n3

12n 48

12 [0/12] n4

12n 192

Any moving charge can be modelled with its associated ZPF geometry

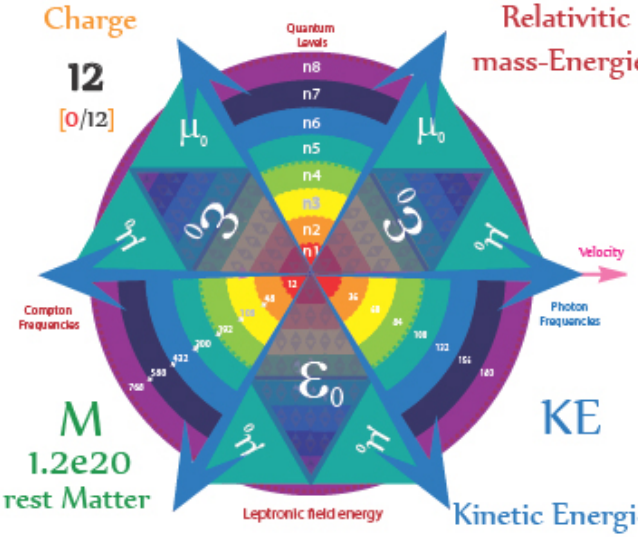
$P^2 = KEM = Mv^2$

All Leptons have 12 quantum inductive loop rotating geometries

Charge

12 [0/12]

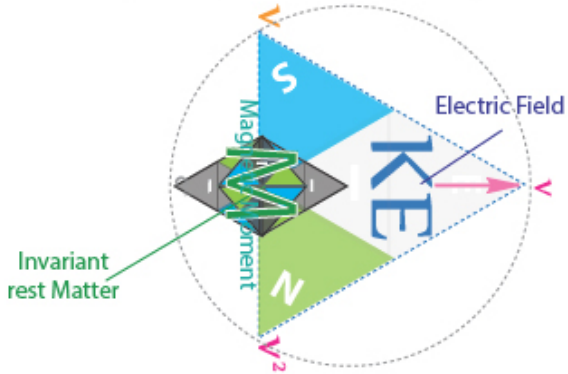
Relativitic mass-Energies



M 1.2e20 rest Matter

KE Kinetic Energies

The motion of an Electron's Tetryonic geometry 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 geometry



All fields have c^2 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

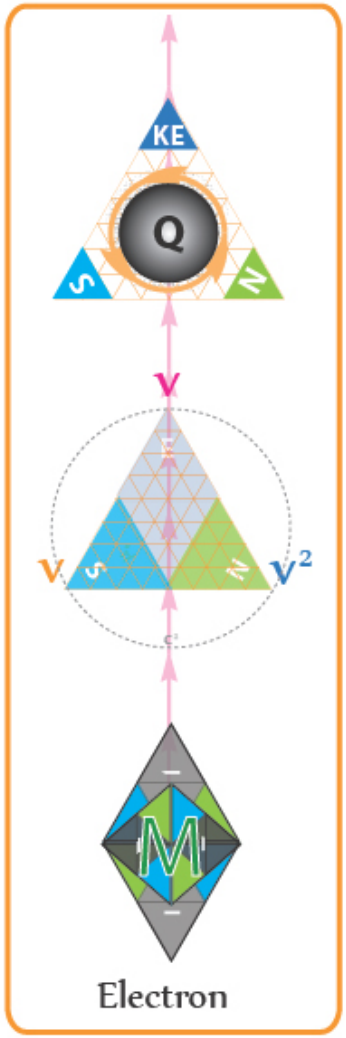
Kinetic field modelling

Tetryonic
Negative Charge
KEM field model

RE

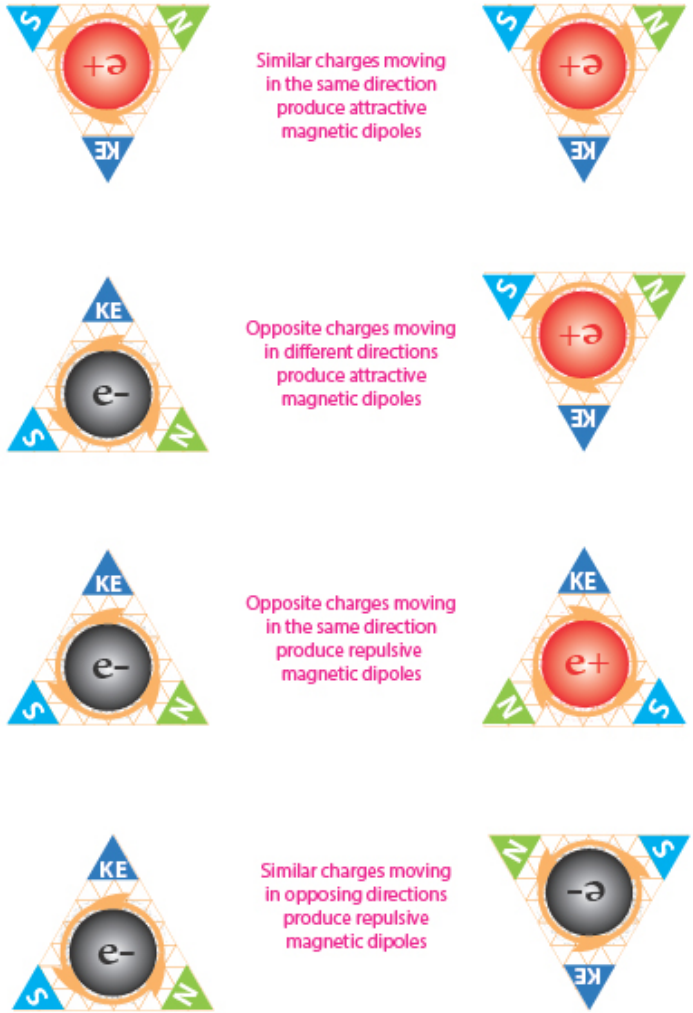
$KE = Mv^2$
2D
Kinetic
Energy
model

$E = mc^2$
3D
rest Matter
Energy
model



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

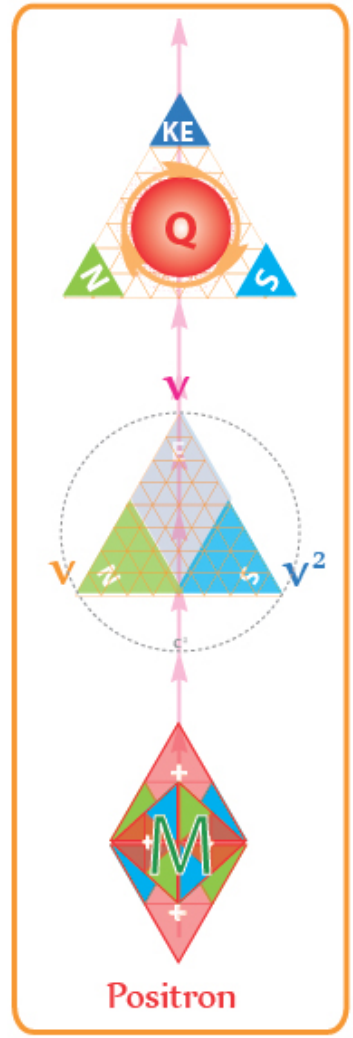


Tetryonic
Positive Charge
KEM field model

RE

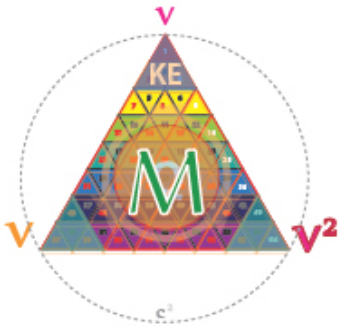
$KE = Mv^2$
2D
Kinetic
Energy
model

$E = mc^2$
3D
rest Matter
Energy
model



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

Lepton Families



rest Matter is invariant

Kinetic energy from motion creates KEM fields

$KEM = Mv^2$

Charged Tetryonic geometry forms elementary particles

12π

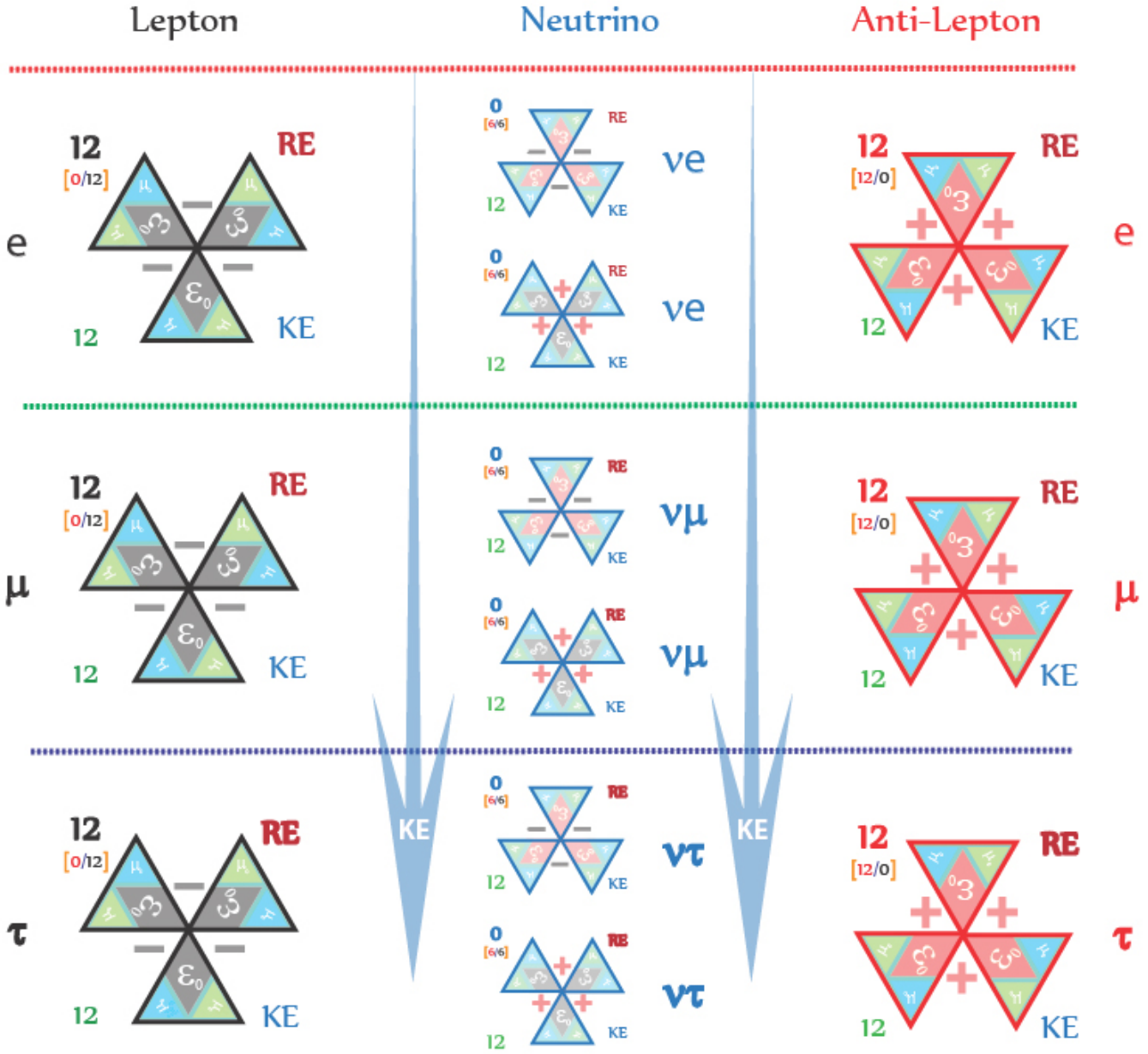
rest matter + KE
[Total relativistic mass-Energy]

All High mass-Energy particles 'decay' into low mass-Energy Particles

Generation 1
Electron

Generation 2
Muon

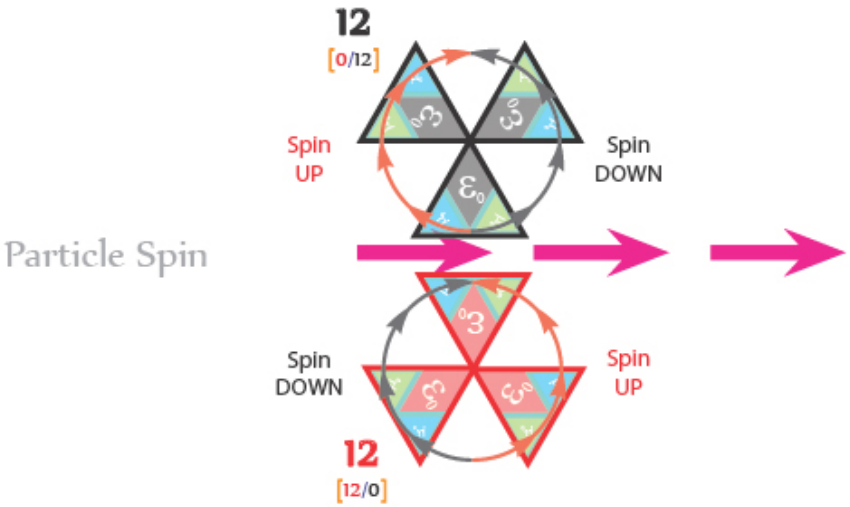
Generation 3
Tauon

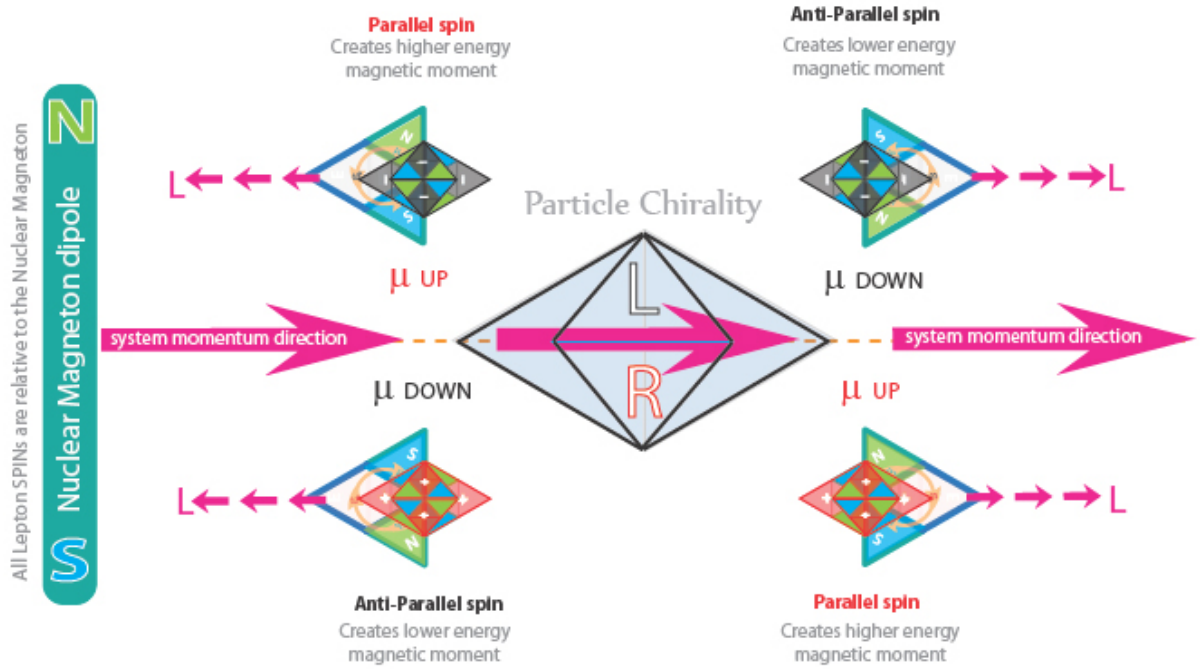


Note: All Lepton geometries are the same size - only the energy density of the EM field changes

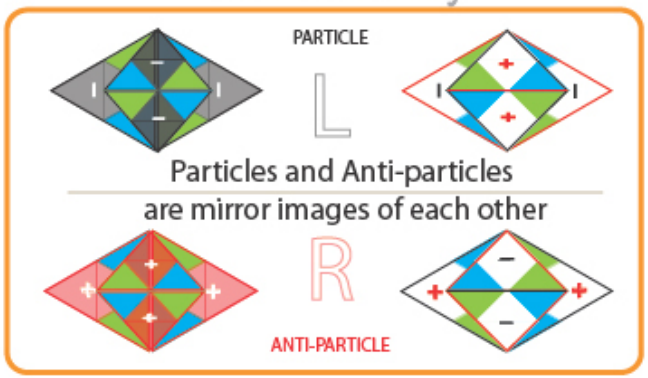
Lepton Helicity and Chirality

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

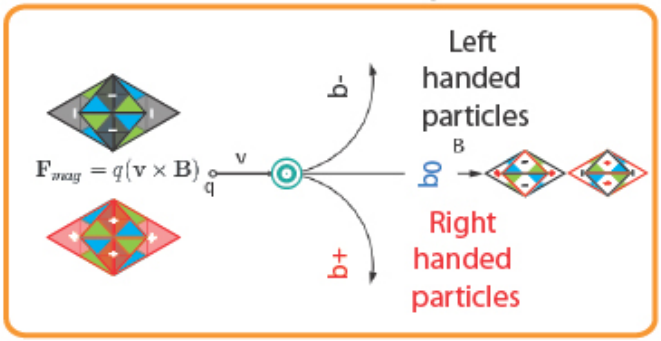




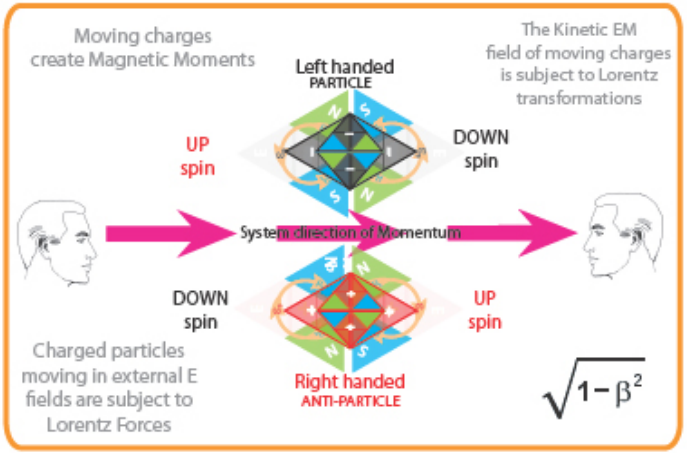
Particle Chirality



Particle Helicity

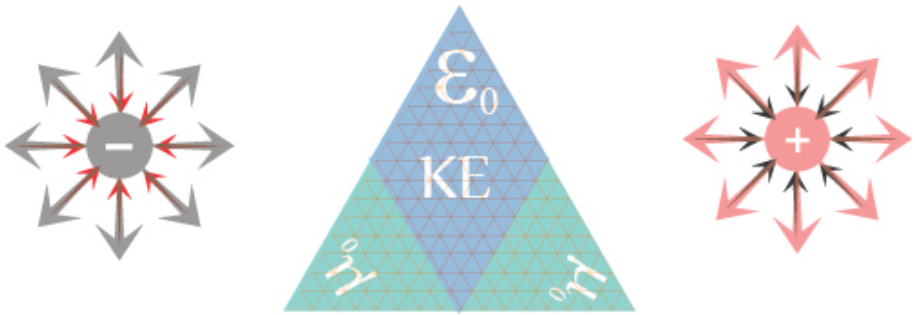


Lorentz Force and Transformation



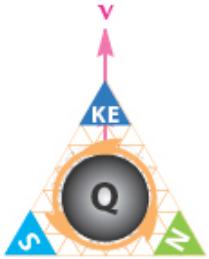
'Point Charges'

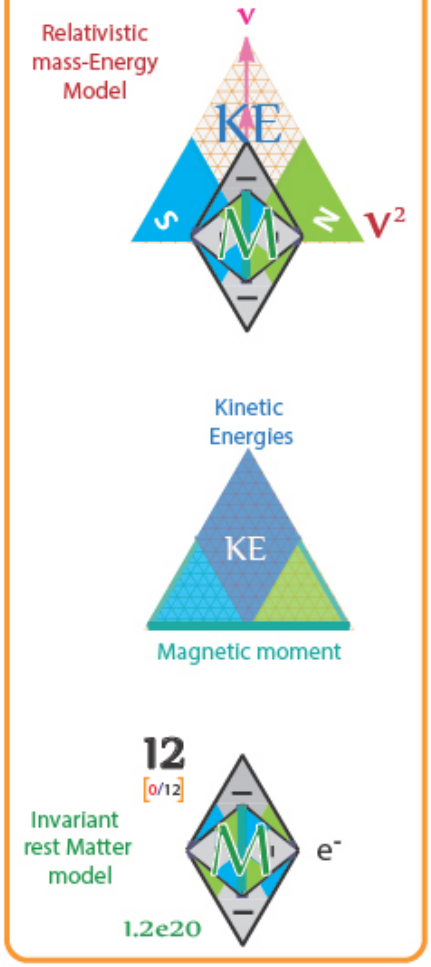
The only true 'point charges' are Zero Point Fields

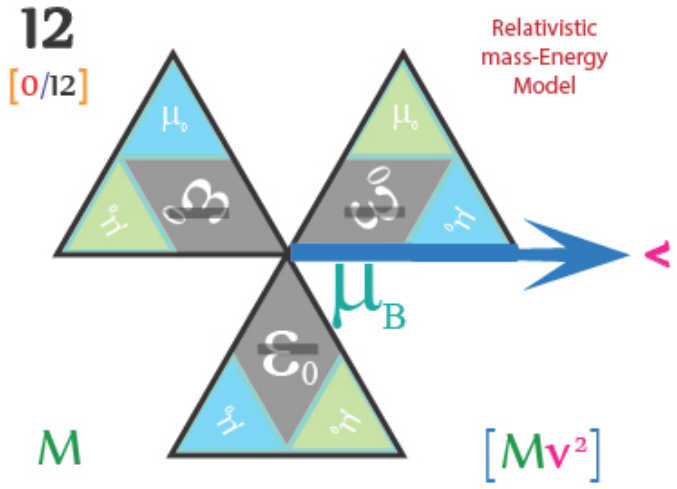


Static charge particles have neutral M Fields
Charges in motion have magnetic moments

Negative Particles



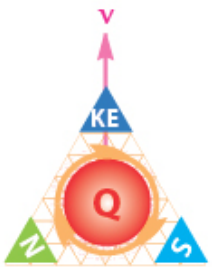


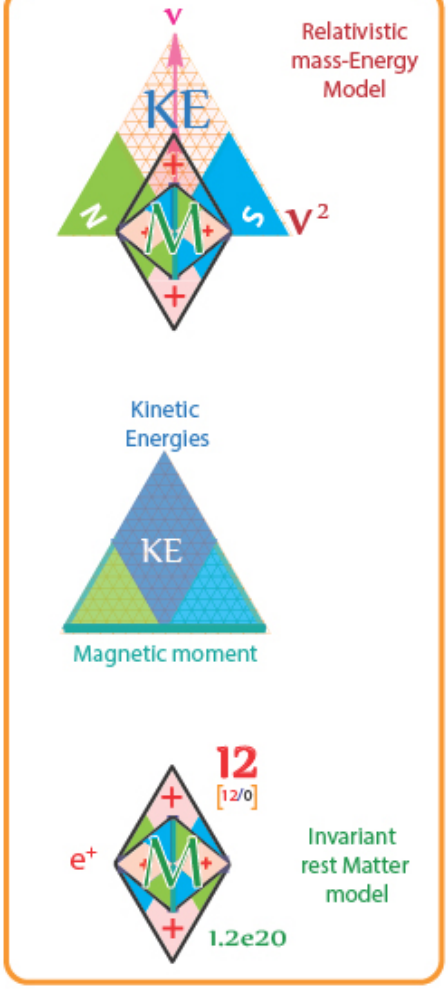


The Kinetic Energy of Charges in motion produces Magnetic Moments

[not a relativistic distortion of spherical charge geometries]

Positive Particles





Fermions

Tetryonic geometry determines particle families
Kinetic Energy determines particle generations

	12π Quark	12π Anti-Quark	12π Lepton	12π Neutrino	
Generation 1 Up - Down	8 [10/2] 12 up 4 [4/8] 12 down	8 [2/10] 12 up 4 [8/4] 12 down	12 [0/12] 12 e 12 [12/0] 12 e	0 [6/6] νe 12 0 [6/6] νe 12	Generation 1 Electron
Generation 2 Charmed - Strange	8 [10/2] 12 charmed 4 [4/8] 12 strange	8 [2/10] 12 charmed 4 [8/4] 12 strange	12 [0/12] 12 μ 12 [12/0] 12 μ	0 [6/6] νμ 12 0 [6/6] νμ 12	Generation 2 Muon
Generation 3 Top - Bottom	8 [10/2] 12 top 4 [4/8] 12 bottom	8 [2/10] 12 top 4 [8/4] 12 bottom	12 [0/12] 12 τ 12 [12/0] 12 τ	0 [6/6] ντ 12 0 [6/6] ντ 12	Generation 3 Tau

Kinetic Energy content

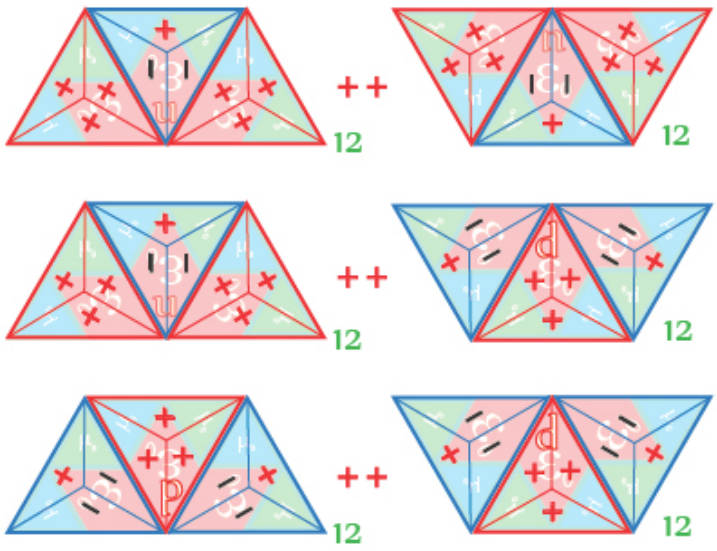
Kinetic Energy content

Mesons

are 24π subatomic particles composed of one quark and one antiquark

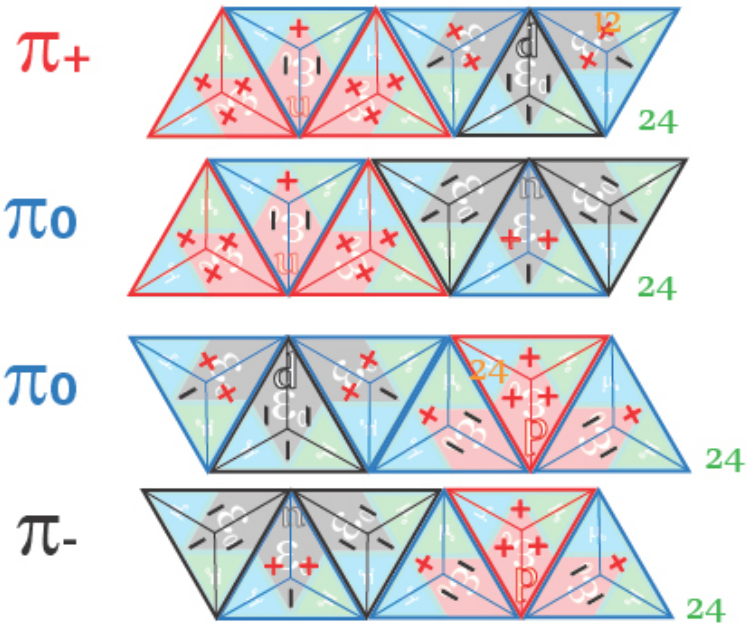
$$24\pi_{\text{Mesons}}\left[\left[\varepsilon_0\mu_0\right]_{\text{ElectroMagnetic}}.\left[mAv^2\right]_{\substack{\text{mass}\\ \text{velocity}}}^{\text{Planck quanta}}\right]^{\text{EM Field}}$$

+ Pions

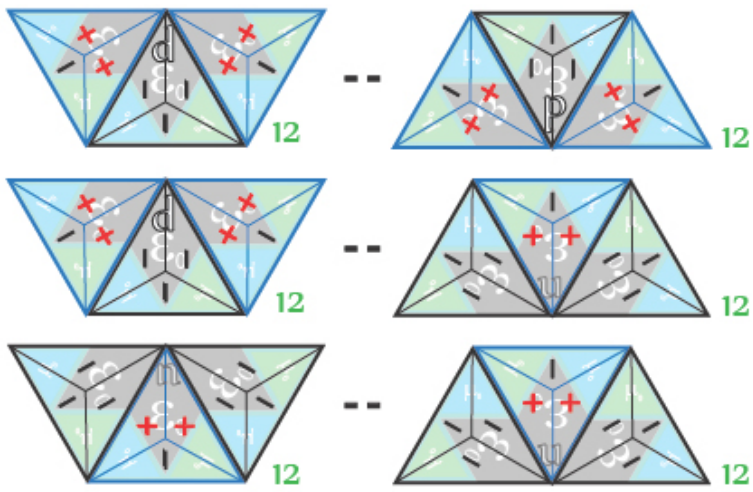


High energy combination only

Short lived combination

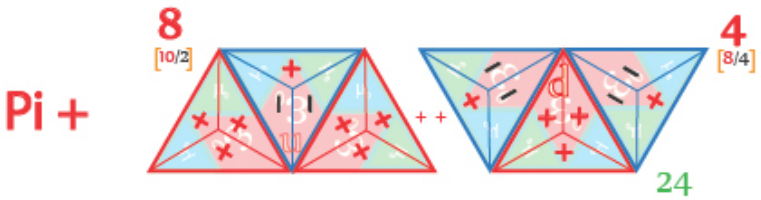


- Pions

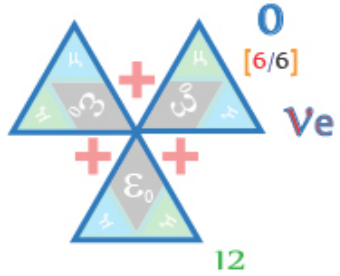


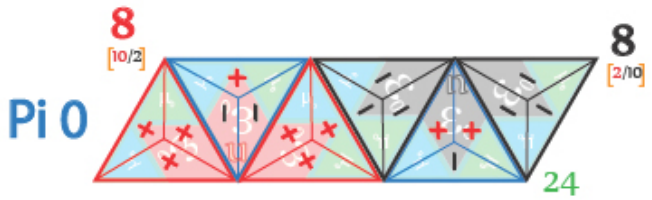
High energy combination only

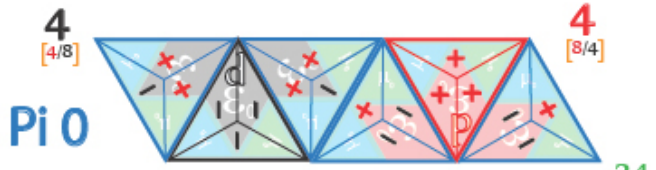
PION decay



12
[18/6]







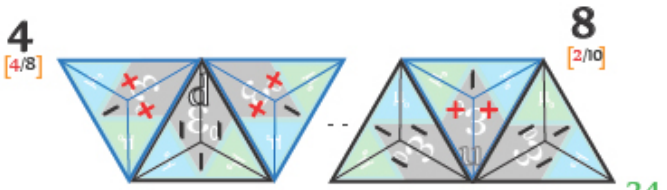
Neutral Pions can decay into a number of Fermion combinations

0
[24/24]

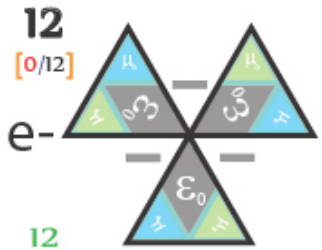
2[Neutrino]+Electron+Positron
2[Electron+Positron]
4[Neutrino]

[[2x]]

[[4x]]



12
[6/18]



$$24\pi\left[\left[\varepsilon_0\mu_0\right].\left[mAv^2\right]\right]$$
EM Field · Planck quanta
Mesons · ElectroMagnetic · mass · velocity

Note: Despite only having 24π geometries
Mesons have same nett Charges as Baryons
[36π geometries]

$$12\pi\left[\left[\varepsilon_0\mu_0\right].\left[mAv^2\right]\right] + 12\pi\left[\left[\varepsilon_0\mu_0\right].\left[mAv^2\right]\right]$$
Fermions · EM Field · ElectroMagnetic · mass · Planck quanta · velocity

Lepton - Neutrino generational pairing produced is dependent on the energy levels of the interacting Pions

Baryon Formation

24π

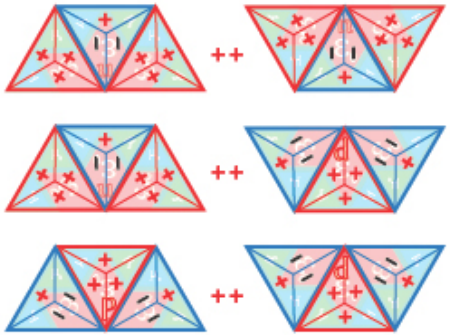
36π

Meson — Short-lived Particles

All particles seek equilibrium of charges
All seek to form neutral charges

Baryon — Stable Particles

+ Pions



++ +16 [20/4]

++ +12 [18/6]

++ +8 [16/8]

Quark

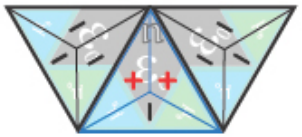
8 [10/2]

-4 [4/8]

Strong colour interactions

4 [8/4]

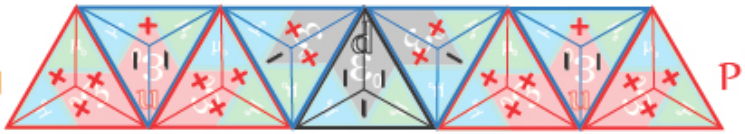
-8 [2/10]



12π

Proton

12 [24/12]



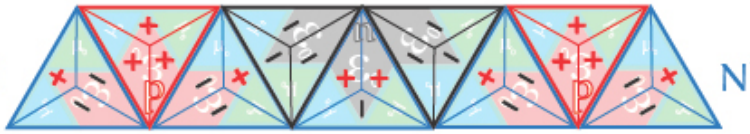
P+

Neutron

0 [18/18]

N°

0 [18/18]

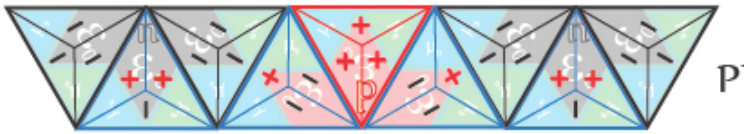


N°

anti - Neutron

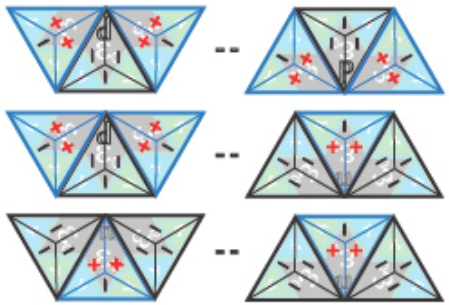
anti-Proton

12 [12/24]



P−

- Pions

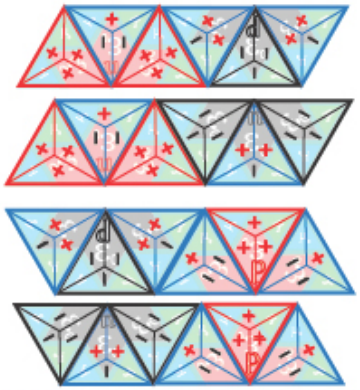


-- -8 [8/16]

-- -12 [6/18]

-- -16 [4/20]

π+ π0 π0 π-



+4 [14/10]

0 [12/12]

0 [12/12]

-4 [10/14]

Baryons

Fermions are all 36π geometry particles

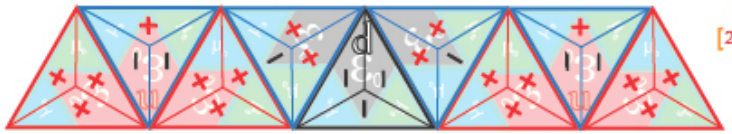
$$36\pi\left[\left[\varepsilon_0\mu_0\right].\left[mAv^2\right]\right]$$

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

Double Charmed Xi

Lambda

P^+

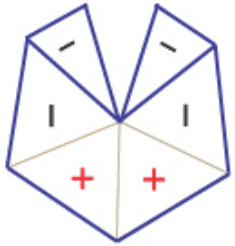


12 [24/12]

Proton

Double Bottom Xi

-1



Bottom Xi

Charmed Bottom Omega

Bottom Lambda

Bottom Omega

Neutron

-2

0 [18/18]

N^0

+1

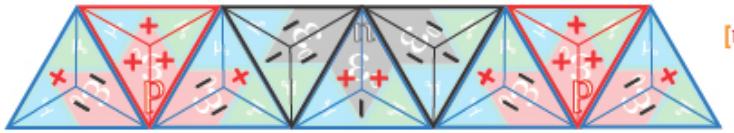
Bottom Sigma

Charmed Omega

Charmed Bottom Omega Prime

+2

N^0



0 [18/18]

0

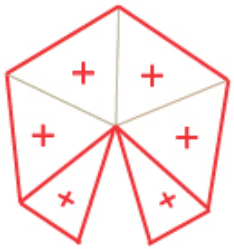
Anti - Neutron

Charmed Xi Prime

Charmed Lambda

Double Charmed Omega

Xi



Anti-Proton

12 [12/24]

P^-

Sigma

Double Bottom Omega

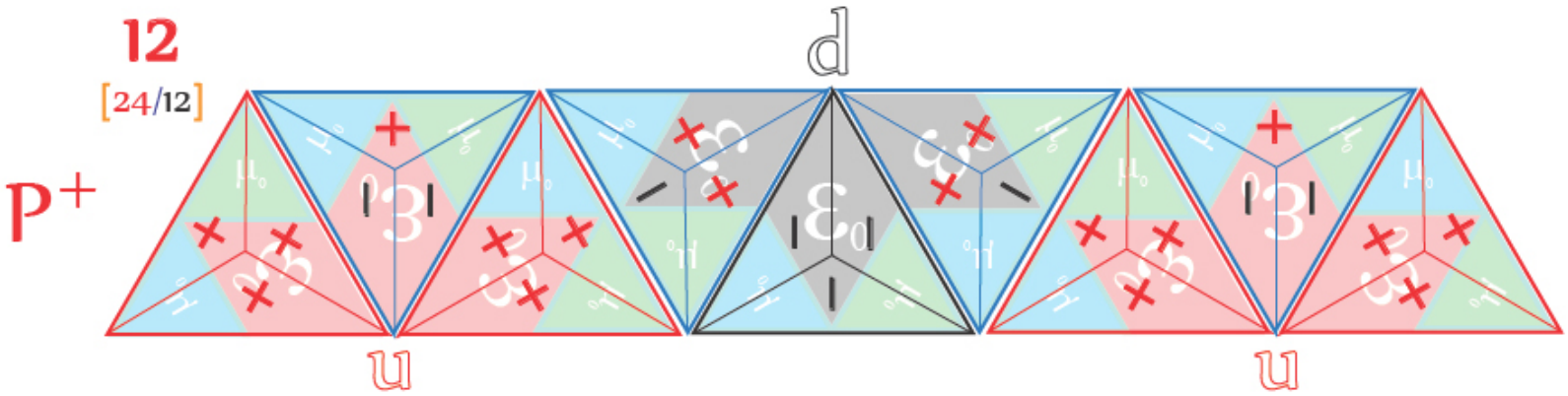
Bottom Xi Prime

Charmed Sigma

Proton

12

[24/12]



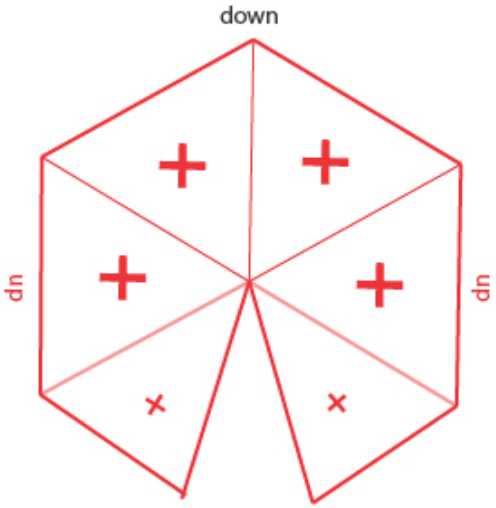
P^+

36

$$36\pi\left[\left[\varepsilon_0\mu_0\right].\left[mAv^2\right]\right]$$

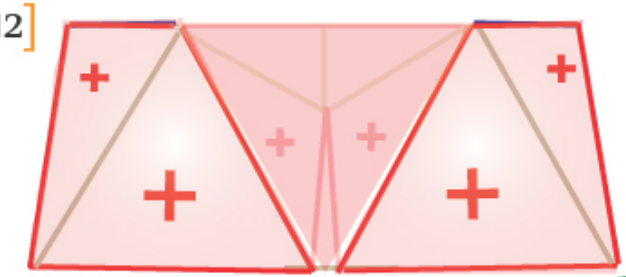
Baryons — EM Field: ElectroMagnetic ($\varepsilon_0\mu_0$) — Planck quanta: mass (m), velocity (v^2)

3 Quarks combine to form
Baryonic geometries
[with 20 externalised fascia]



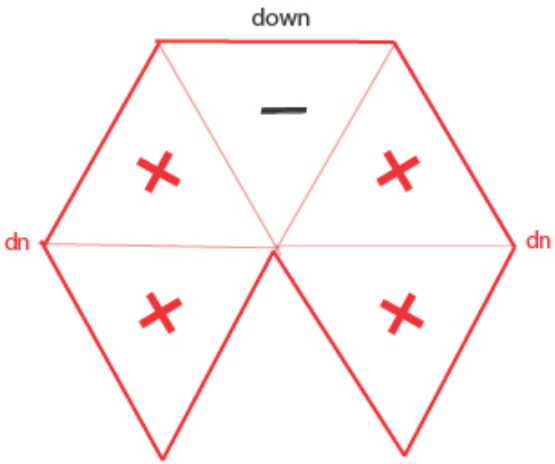
12

[24/12]



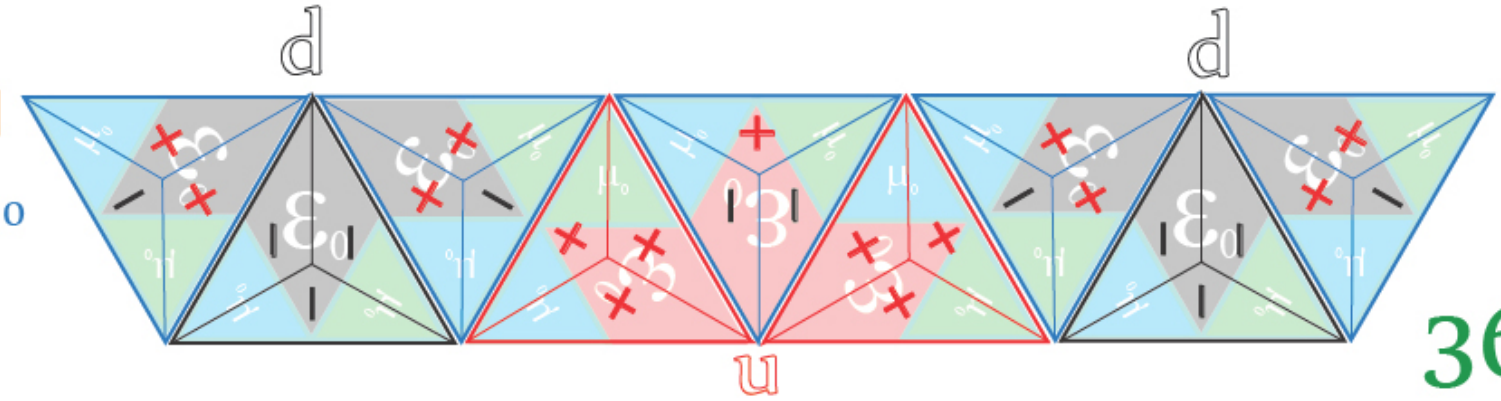
36

Proton



Neutron

0
[18/18]
N°

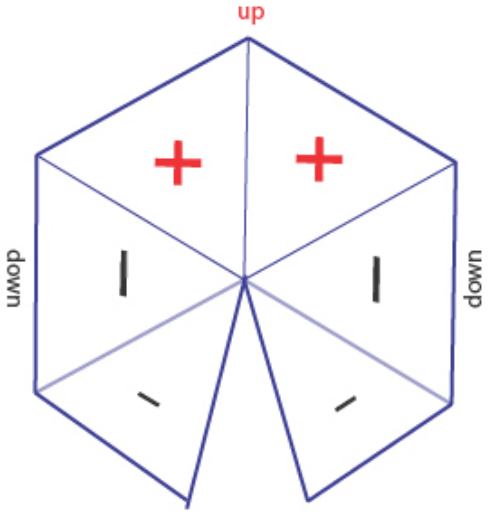


36

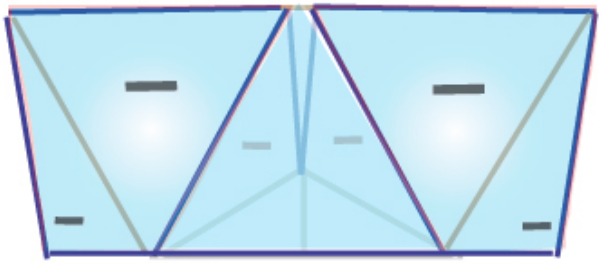
$$36\pi\left[\left[\varepsilon_0\mu_0\right].\left[mAv^2\right]\right]$$

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

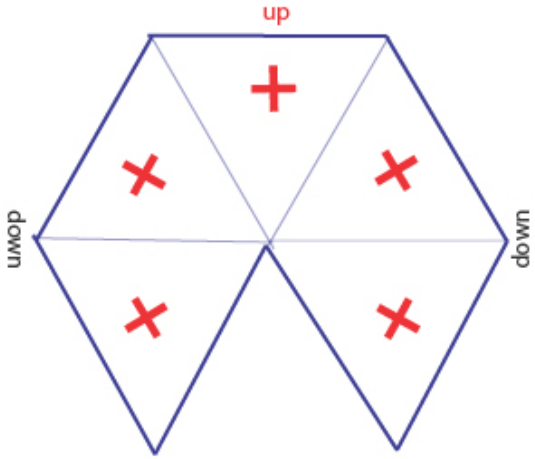
3 Quarks combine to form
Baryonic geometries
[with 20 externalised fascia]



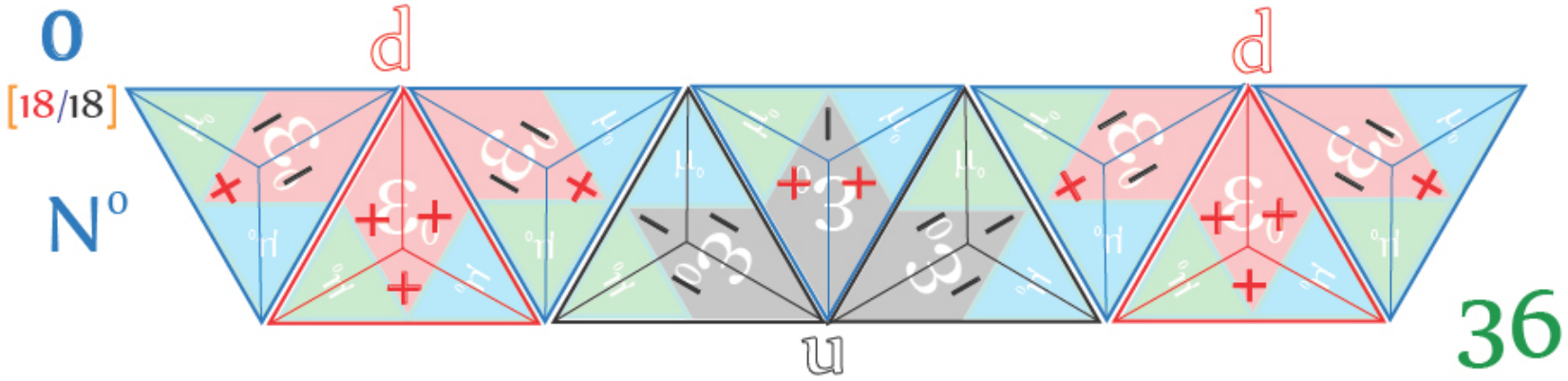
0
[18/18]



Neutron 36



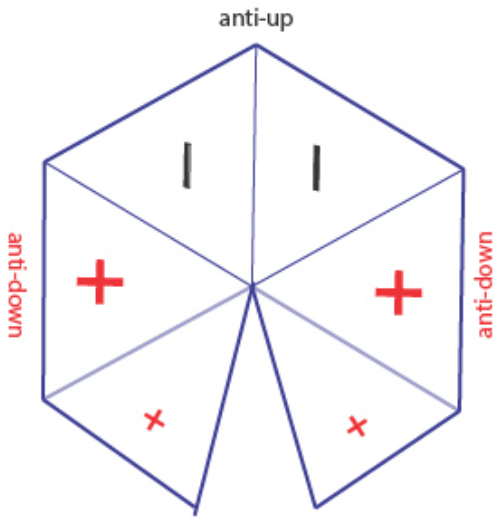
anti-Neutron

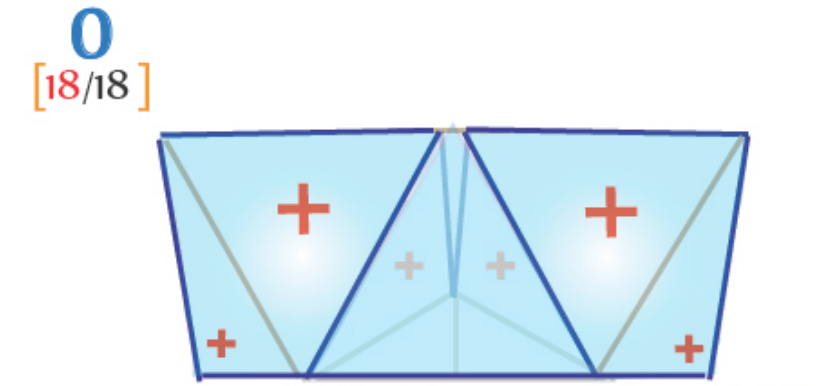


$$36\pi\left[\left[\varepsilon_0\mu_0\right].\left[mAv^2\right]\right]$$

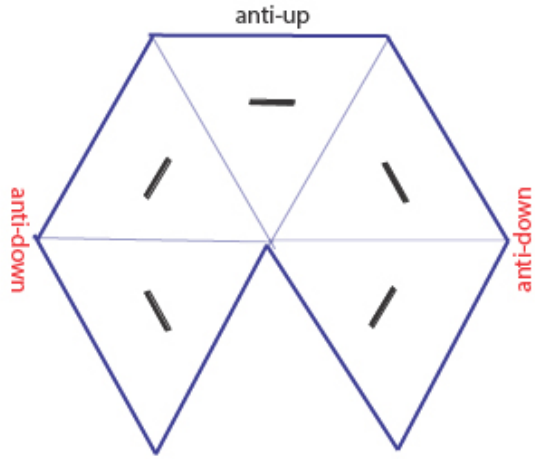
Baryons — EM Field: ElectroMagnetic ($\varepsilon_0\mu_0$) — Planck quanta: mass (m), velocity (v^2)

3 Quarks combine to form
Baryonic geometries
[with 20 externalised fascia]





anti-Neutron 36

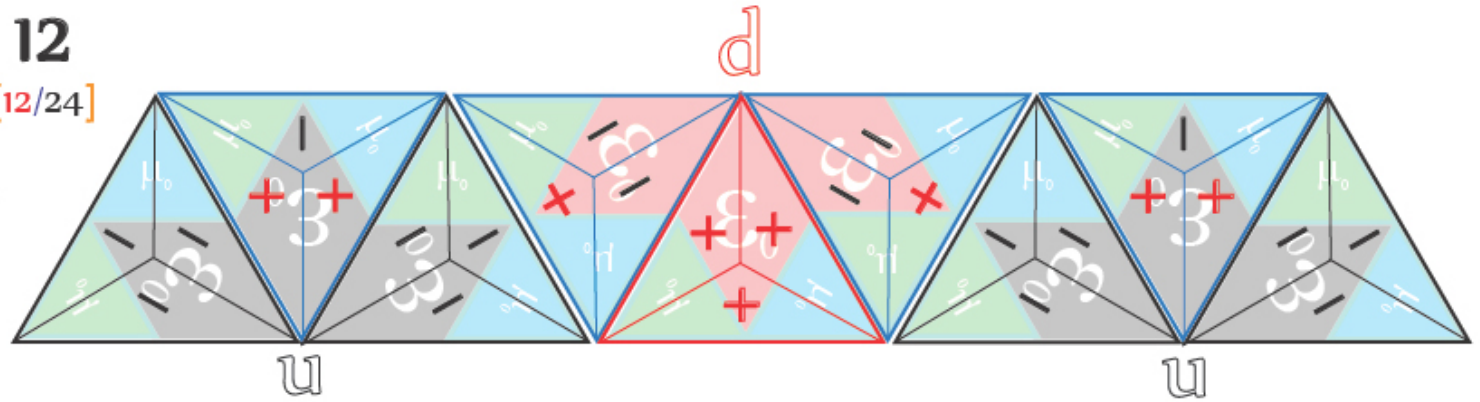


anti-Proton

12

[12/24]

P^-

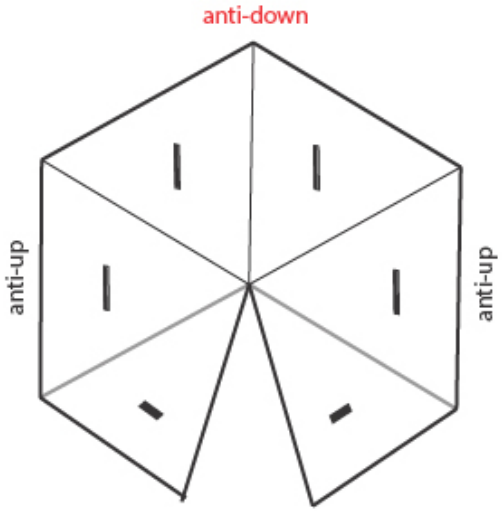


36

$$36\pi\left[\left[\varepsilon_0\mu_0\right].\left[mAv^2\right]\right]$$

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

3 Quarks combine to form
Baryonic geometries
[with 20 externalised fascia]

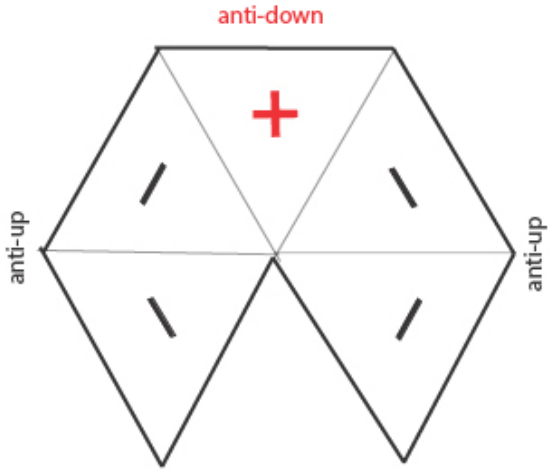


12

[12/24]

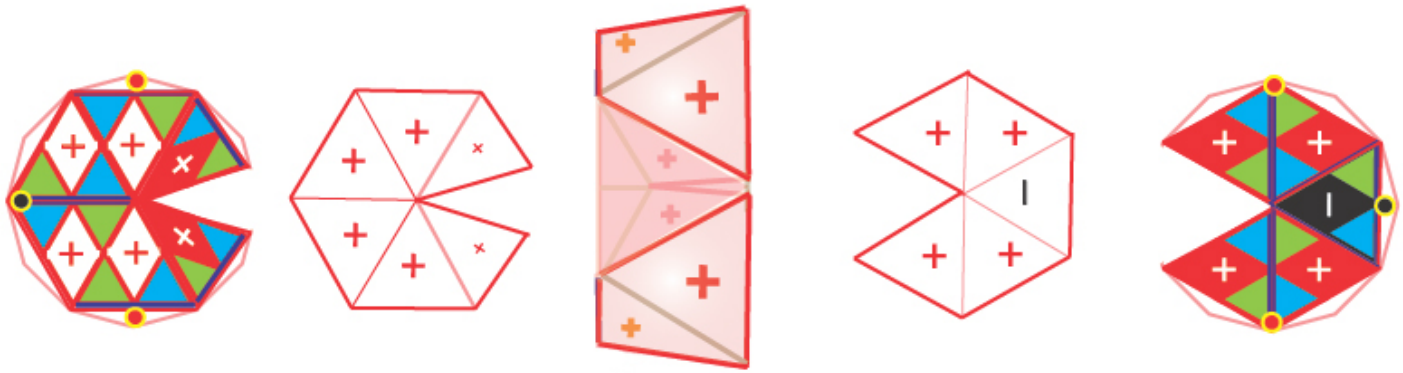
36

anti-Proton



Baryon geometry

Proton

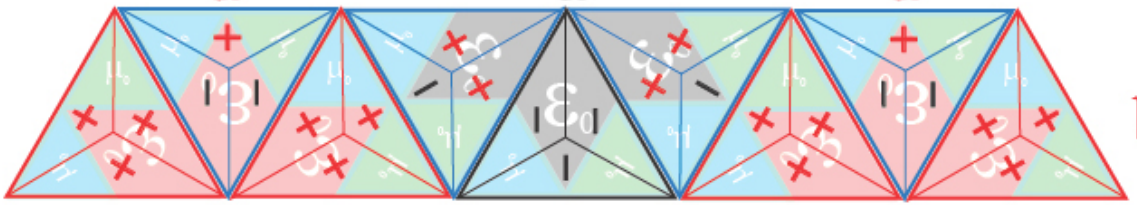


12

Tetryonic Charge

[24/12]

u d u



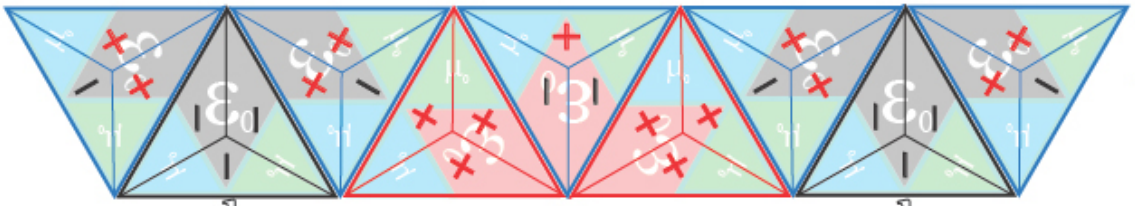
P^+

+1

QM Charge
Proton

[36] Linear [pre-strong force interaction] Tetryon Structures

Protons are
GEOMETRIC MIRROR IMAGES
of Neutrons



N^o

0

QM Charge
Neutron

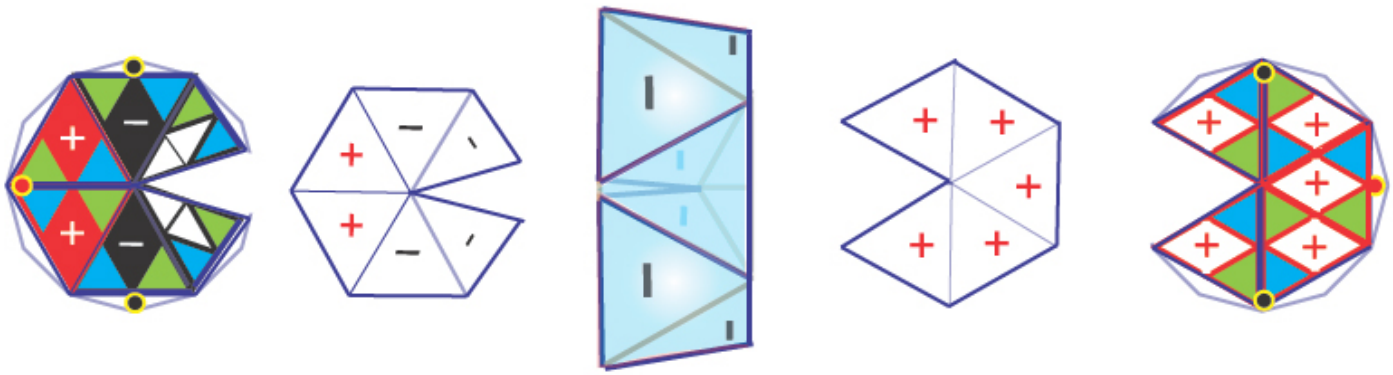
d u d

[18/18]

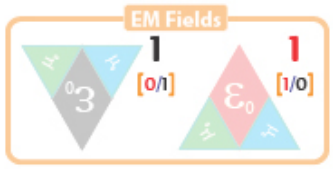
Tetryonic Charge

0

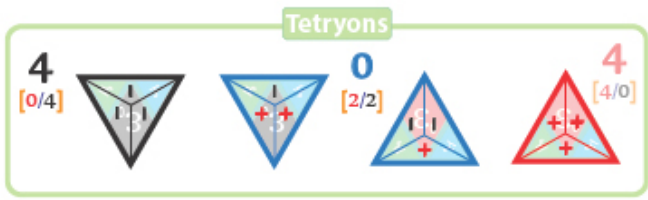
Neutron



Tetryonic Charge Geometries

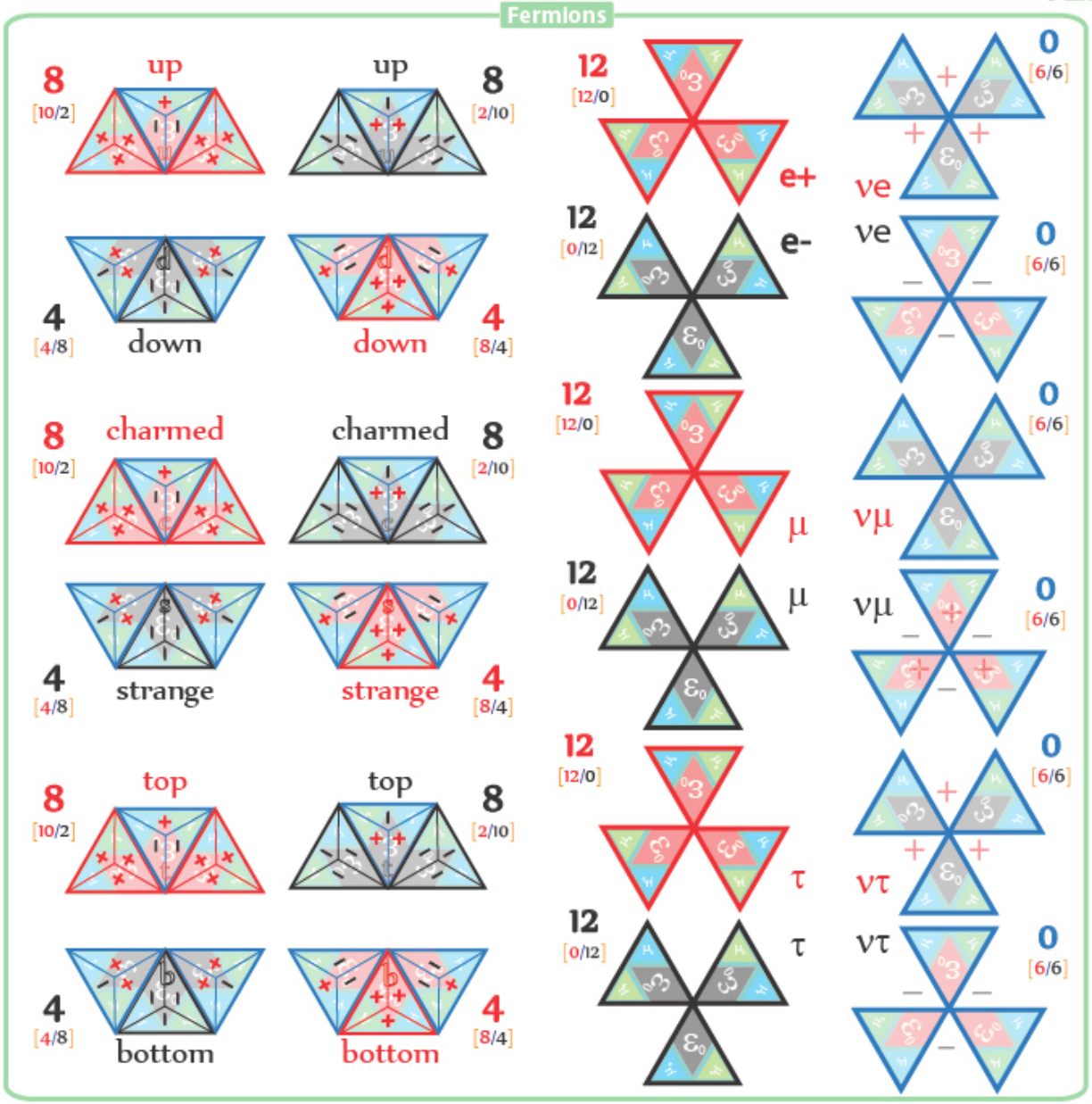


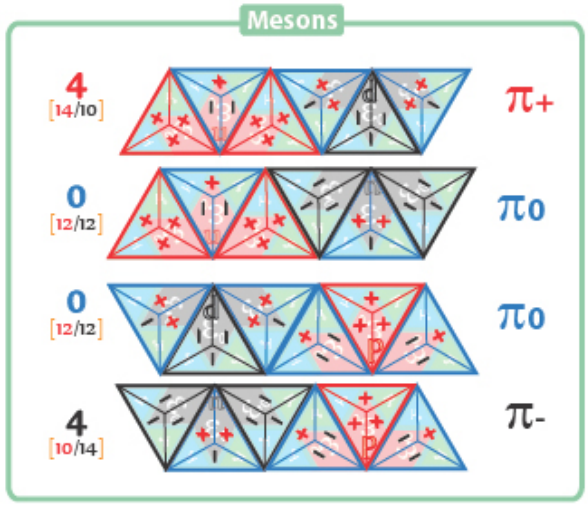
1π



4π

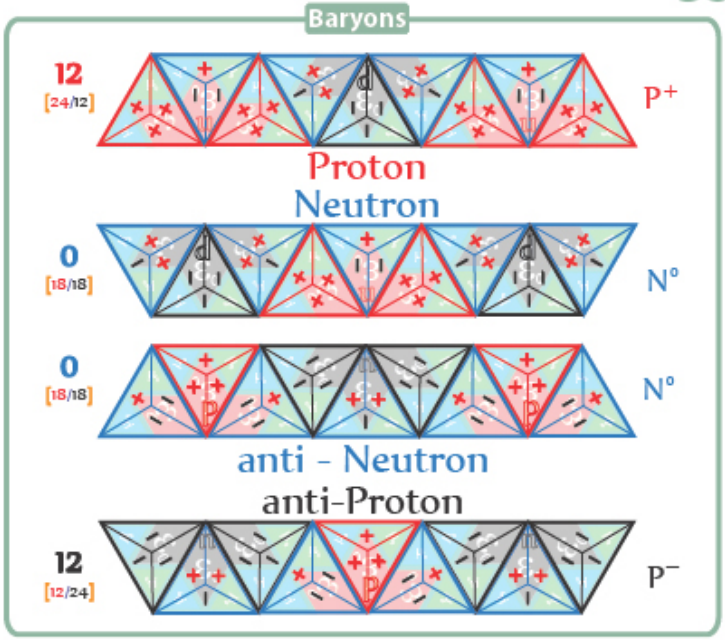
12π





24π

36π



Tetryonic Energy levels

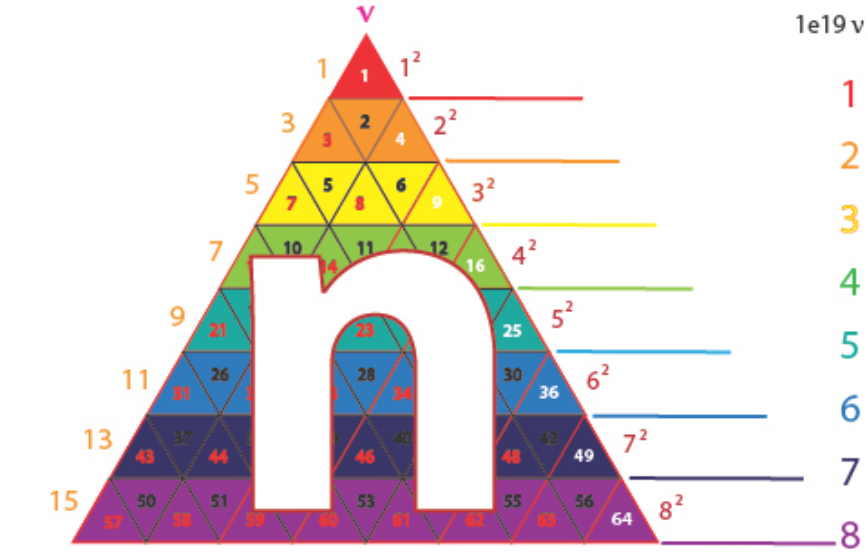
$$E = n\pi\left[\left[mAv^2\right]\right]$$

Planck quanta; mass; velocity

Energy levels

n

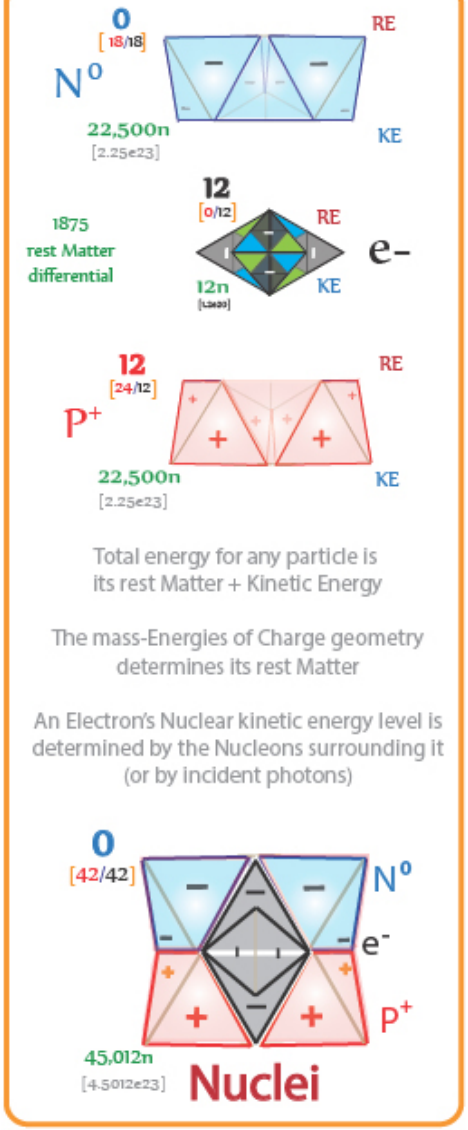
1e19 ν = n



ν **Tetryonic energy quanta** ν²

Every π fascia of a Field or Particle holds square energy levels
[mass-Energy]

rest Matter

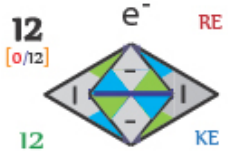


Nuclear Quantum Level	Electron Kinetic Energy Level
8	768
7	588
6	432
5	300
4	192
3	108
2	48
1	12

As the Nuclei quanutm level increases - so does the Electrons energy and total Angular momentum

The Tetryonic KEM Colour code

As the energy levels of Nuclei increase/decrease
the Leptons within them change accordingly



Electron

1	2	3	4	5	6	7	8
1	4	9	16	25	36	49	64

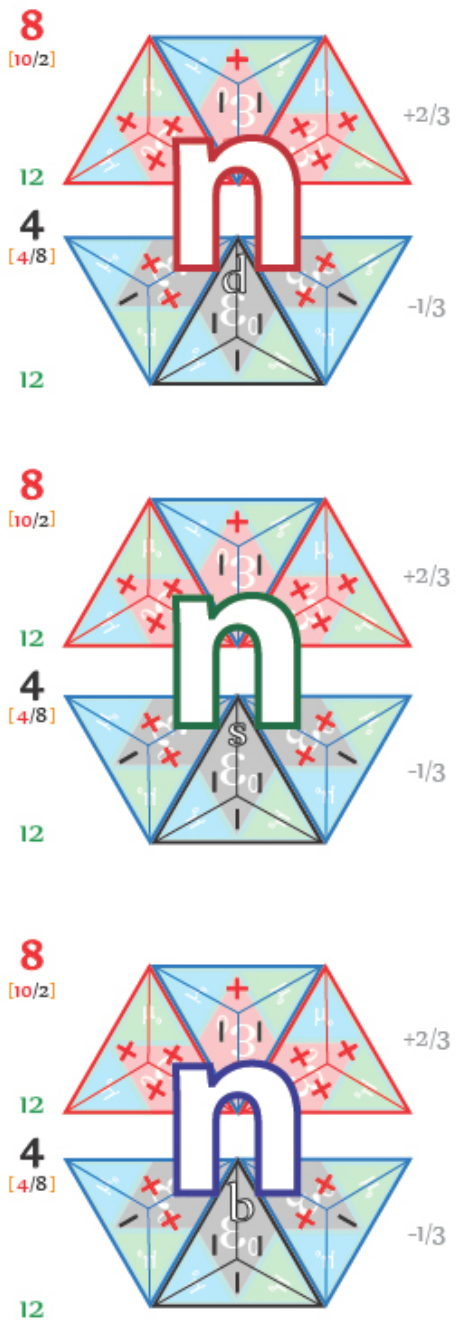
All energy levels are Tetryonic square number quantas
ie 1, 4 , 9, 16, 25 etc (1,2,3,4,5)

$$KE = \frac{2\pi}{\text{Photons}}\left[\left[\varepsilon_0\mu_0\right].\left[mAv^2\right]\right]$$

EM Field; ElectroMagnetic; Planck quanta; mass; velocity

TETRYONIC Elemental

The Particle Zoo



UP
DOWN
CHARMED
STRANGE
TOP
BOTTOM

gen 1
gen 2
gen 3

Quarks form Baryons according to their respective energy levels and EM apex orientations

The particle Zoo is the result of all possible 36π tri-Quark energy geometries

[+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
[-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

Same fascia quarks combinations are not stable & very short lived

Any combinations of inter-generational quarks results in differing energy levels in the created Baryon due to energy equlisation

$$36\pi\left[\left[\varepsilon_0\mu_0\right].\left[mAv^2\right]\right]$$

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

Twice the number of combinations are possible with anti-matter

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

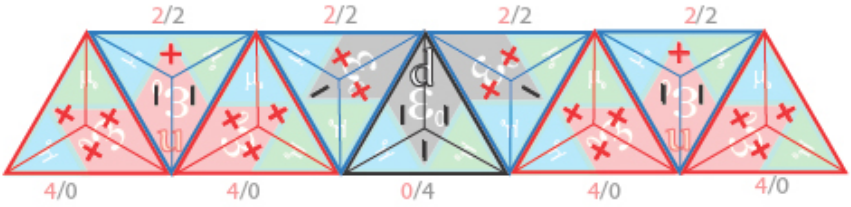
216 possible Baryon combinations [excluding anti-matter] with each combination producing differing Baryonic nett energy levels

note: Quarks always form [+-+] or [-+-] Baryonic geometries
[same charges never combine except under high energy conditions]
ie. Proton is a [udu] not [uud] as is commonly stated

Baryons

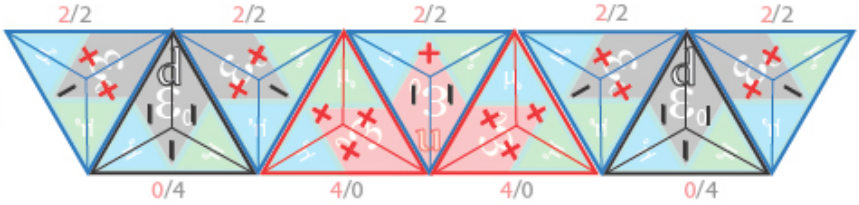
12 [24/12]

Proton



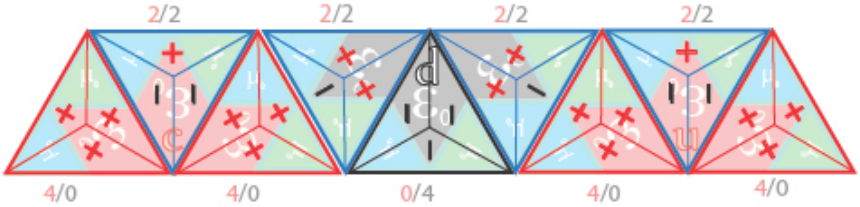
0 [18/18]

Neutron



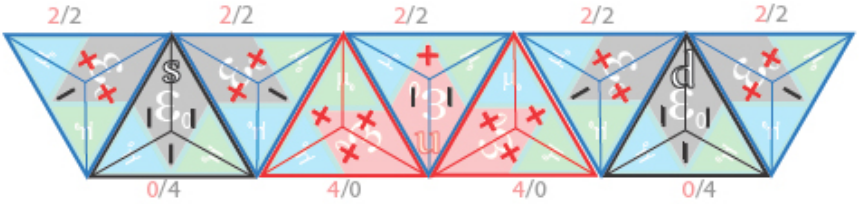
12 [24/12]

Charmed Lambda



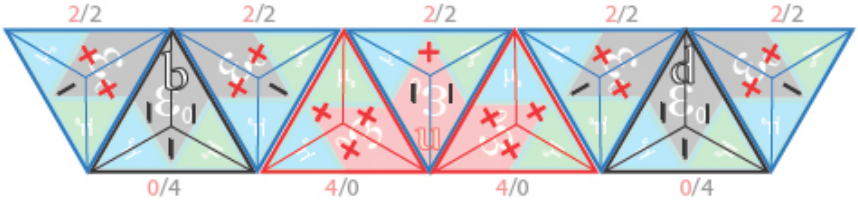
0 [18/18]

Lambda



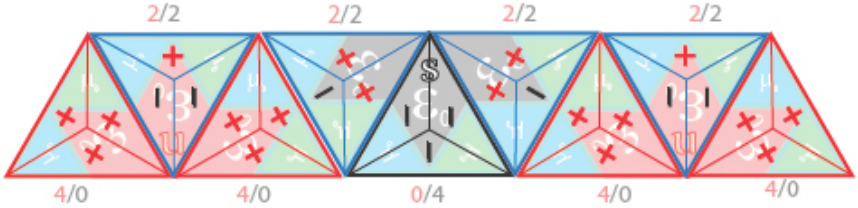
0 [18/18]

Bottom Lambda



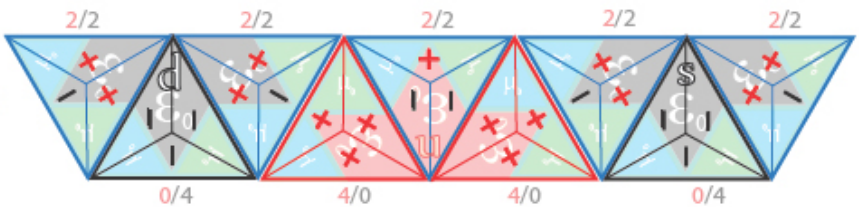
12 [24/12]

Sigma+



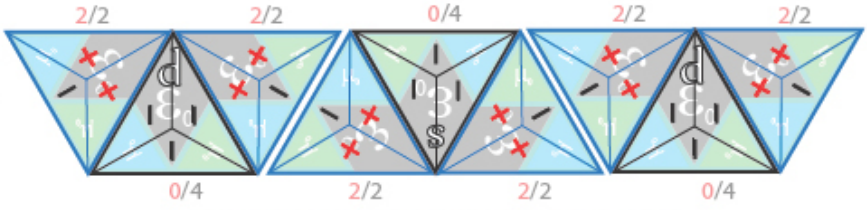
0 [18/18]

Sigma0



12 [12/24]

Sigma-



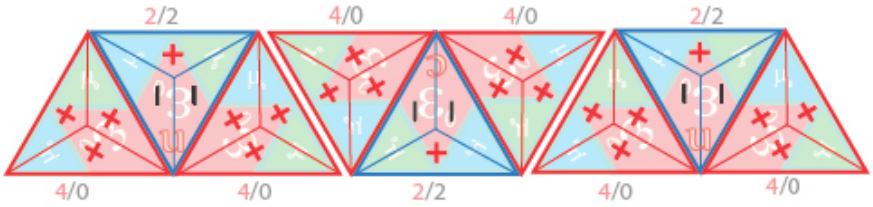
Unstable High energy particle (extremely short lived)

Baryons

24
[30/06]

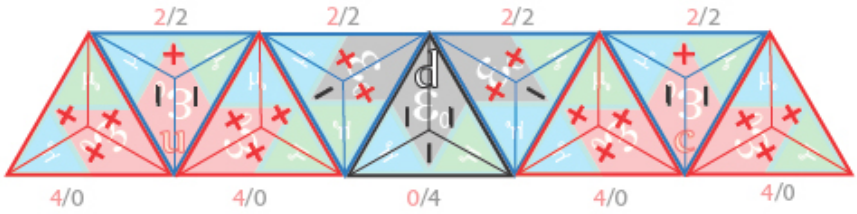
Charmed Sigma

Unstable High energy particle (extremely short lived)



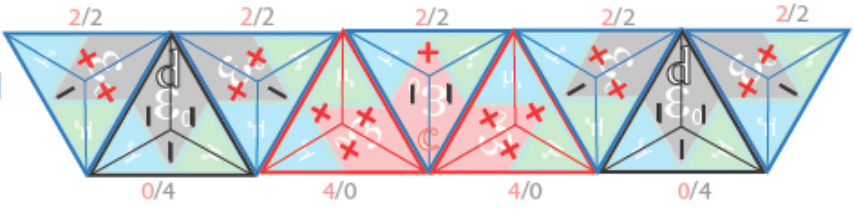
12
[24/12]

Charmed Sigma



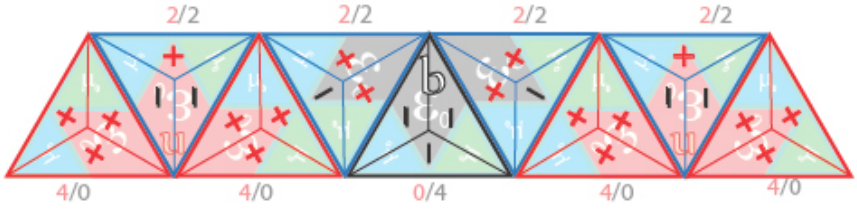
0
[18/18]

Charmed Sigma



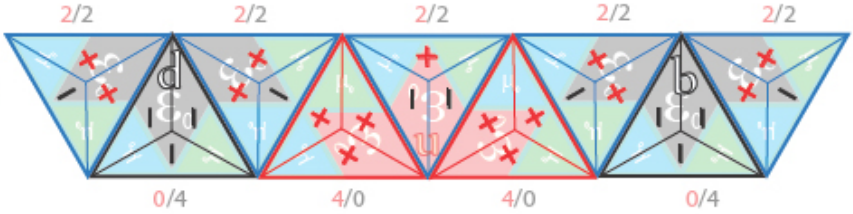
12
[24/12]

Bottom Sigma

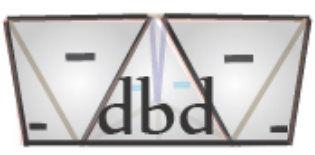


0
[18/18]

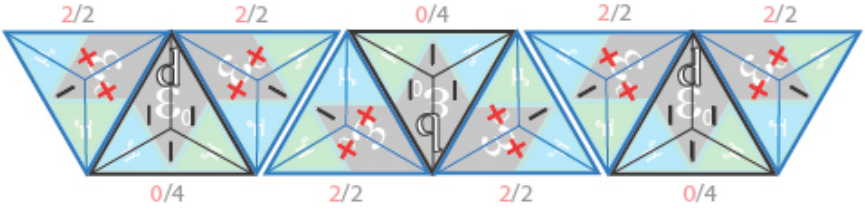
Bottom Sigma



12
[12/24]



Bottom Sigma

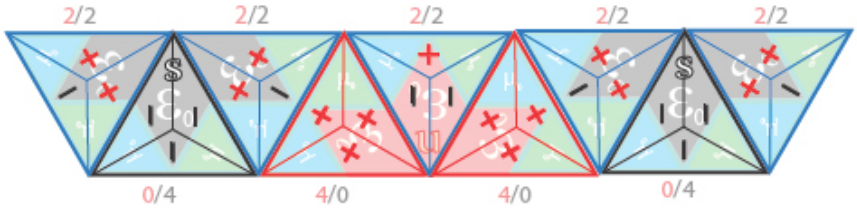


Unstable High energy particle (extremely short lived)

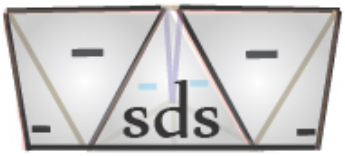
Baryons

0
[18/18]

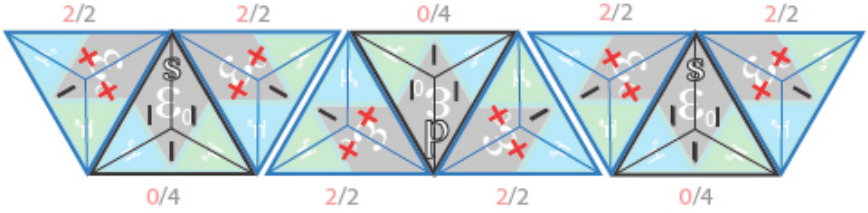
Xi



12
[12/24]



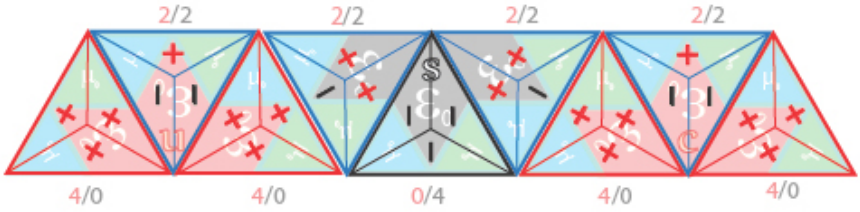
Xi



Unstable High energy particle (extremely short lived)

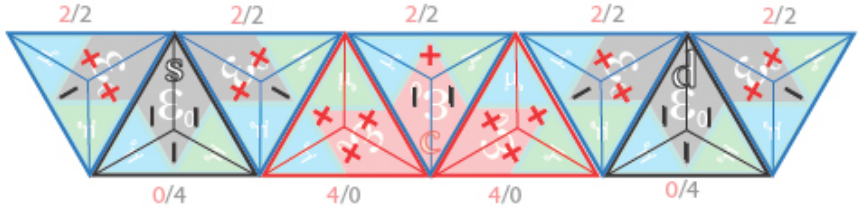
Charmed Xi Prime

12
[24/12]



Charmed Xi Prime

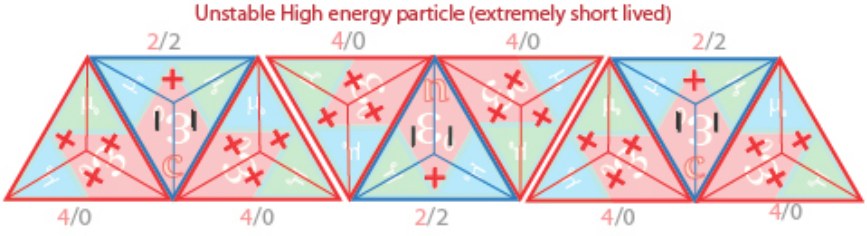
0
[18/18]



Double Charmed Xi

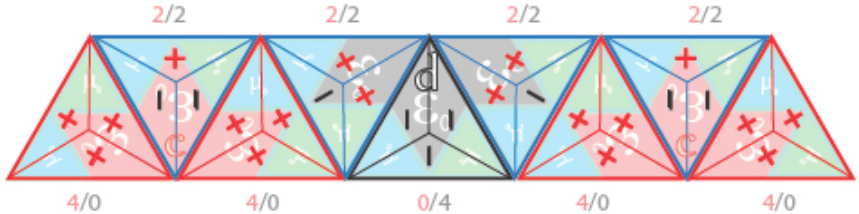
24
[30/06]

Unstable High energy particle (extremely short lived)



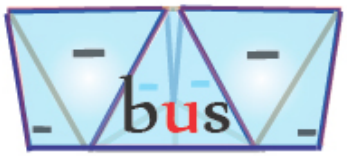
Double Charmed Xi

12
[24/12]

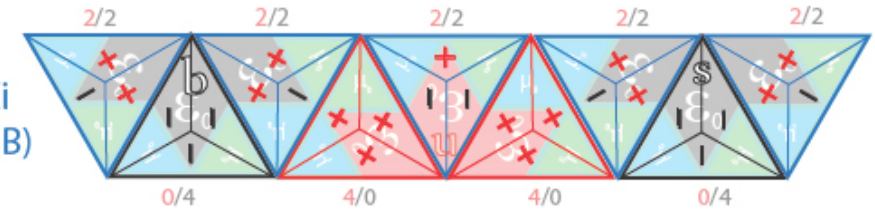


Baryons

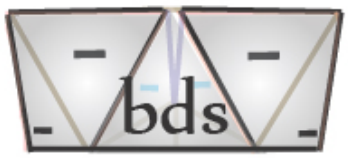
0
[18/18]



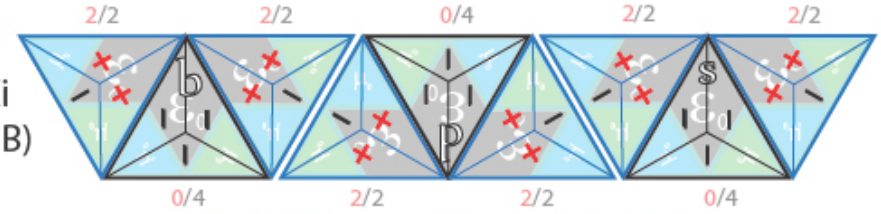
Bottom Xi
(Cascade B)



12
[12/24]



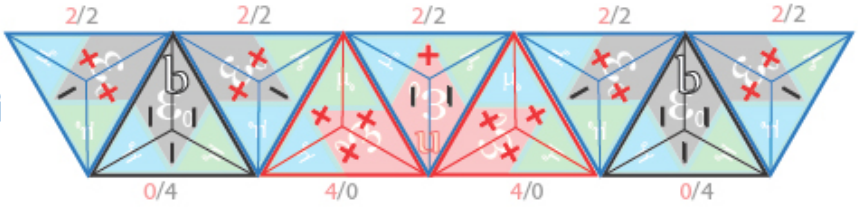
Bottom Xi
(Cascade B)



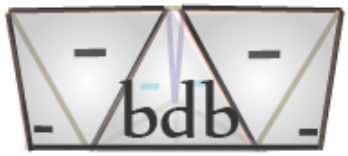
Unstable High energy particle (extremely short lived)

0
[18/18]

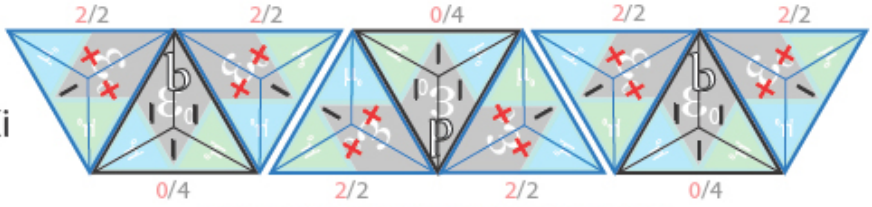
Double
Bottom Xi



12
[12/24]



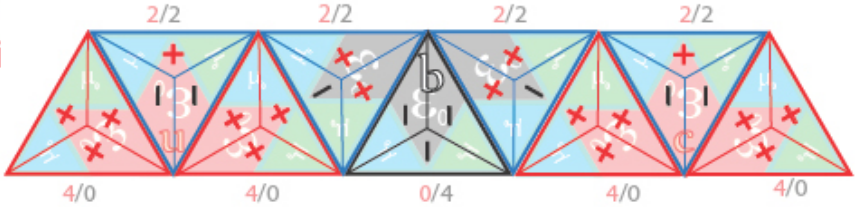
Double
Bottom Xi



Unstable High energy particle (extremely short lived)

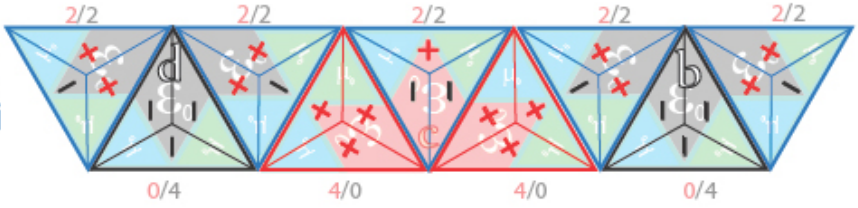
12
[24/12]

Charmed
Bottom Xi



0
[18/18]

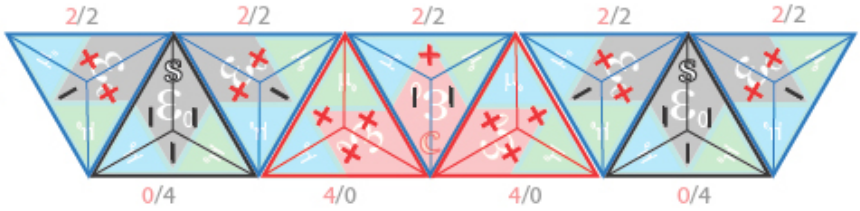
Charmed
Bottom Xi



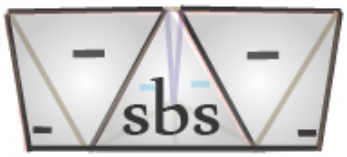
Baryons

0
[18/18]

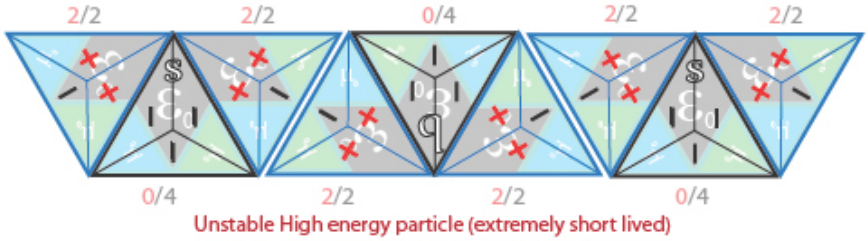
Charmed Omega



12
[12/24]



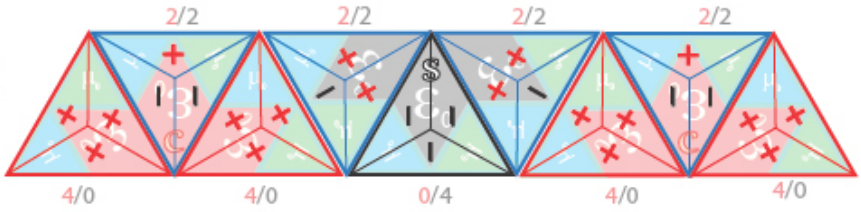
Bottom Omega



Unstable High energy particle (extremely short lived)

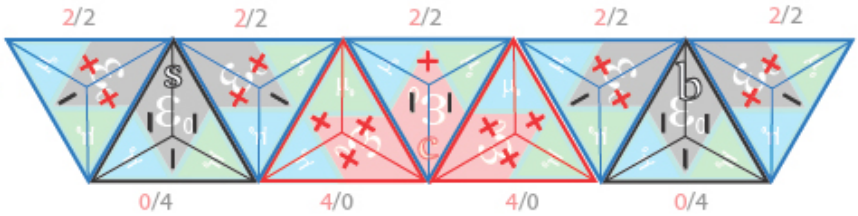
12
[24/12]

Double Charmed Omega

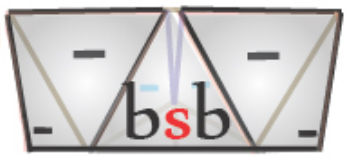


0
[18/18]

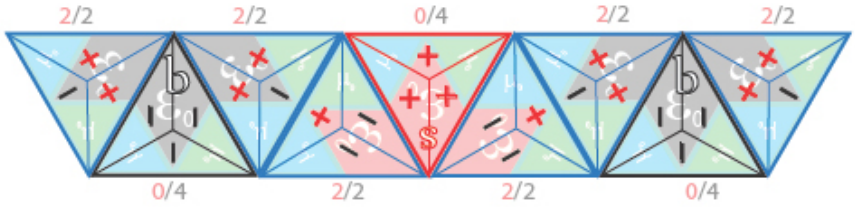
Charmed Bottom Omega



12
[12/24]

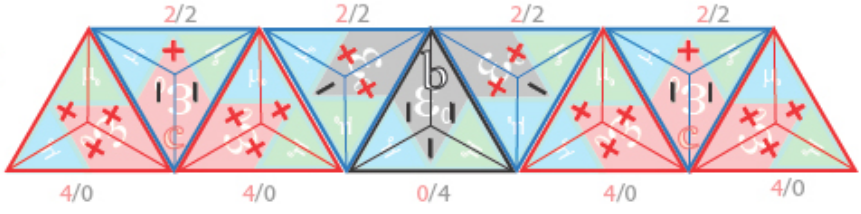


Double Bottom Omega



12
[24/12]

Double Charmed Bottom Omega



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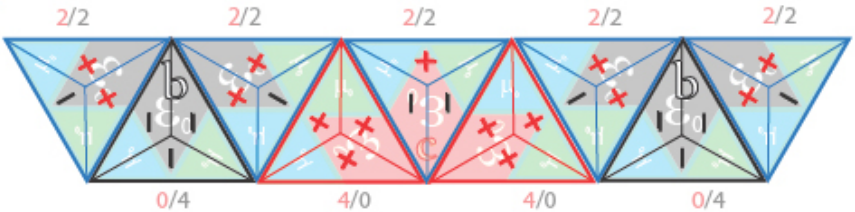
[18/18]

Charmed Double Bottom Omega



Charge-Energy-Matter geometries

Charge

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

EM Field: ElectroMagnetic; Planck quanta: mass, velocity

EM Energy

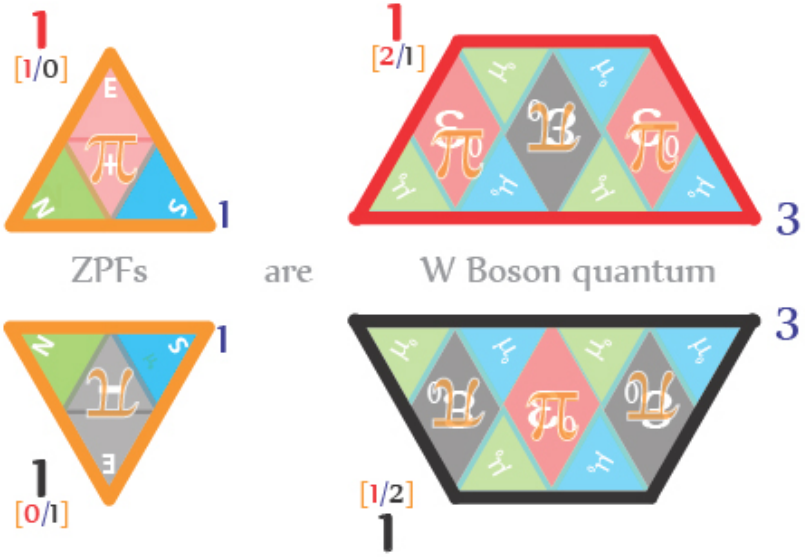
$$\text{EVEN}\pi\,\text{EM waves}\left[\left[\varepsilon_0\mu_0\right].\left[m\mathbb{A}v^2\right]\right]$$

EM Field: ElectroMagnetic; Planck quanta: mass, velocity

Matter

$$4n\pi\,\text{Matter}\left[\left[\varepsilon_0\mu_0\right].\left[m\mathbb{A}v^2\right]\right]$$

EM Field: ElectroMagnetic; Planck quanta: mass, velocity



Bosons

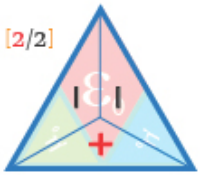
Photons

Tetryons

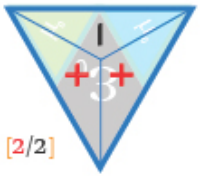
Gluons

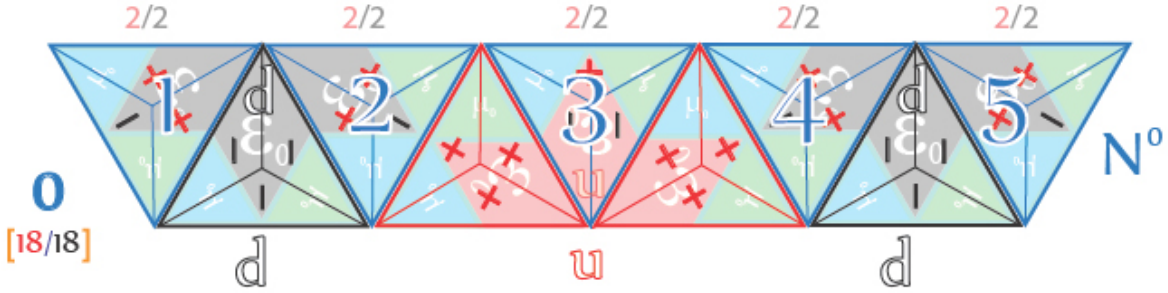
Gluons are the exchange particles for the color force between quarks, analogous to the exchange of photons in the electromagnetic force between two charged particles.

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

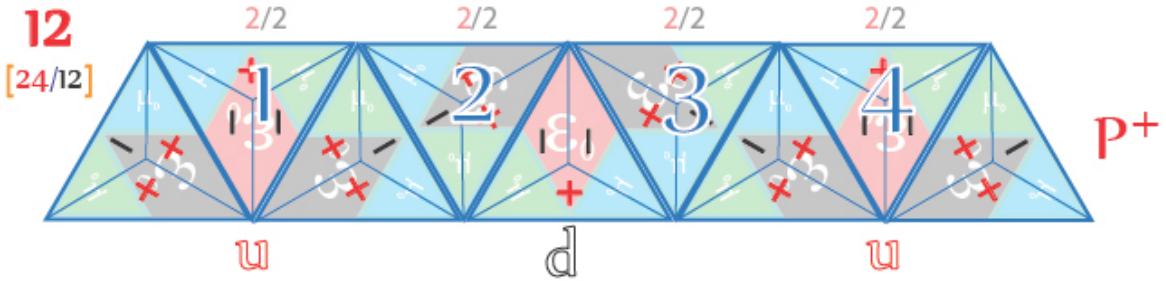


Gluons are considered to be bi-colored, carrying a unit of color and a unit of anti-color

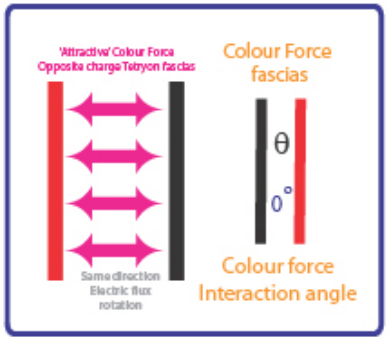




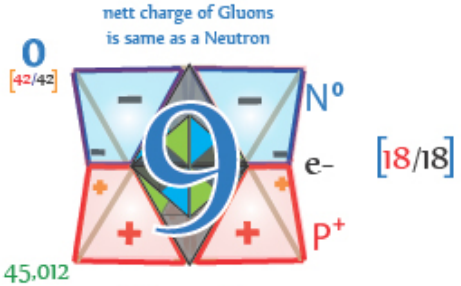
Gluons are the neutral Matter Tetryons essential in forming all Quarks and Baryons

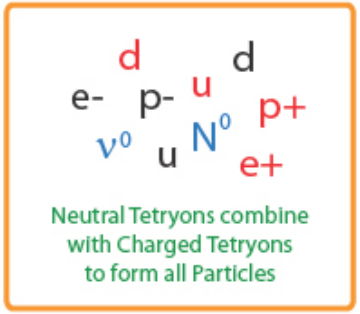


They can be considered as Tetryonic di-electrics located between charged Tetryon masses



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



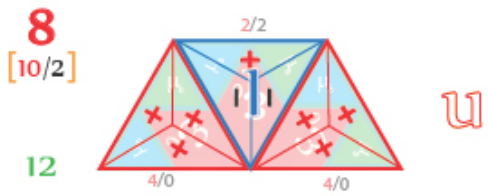


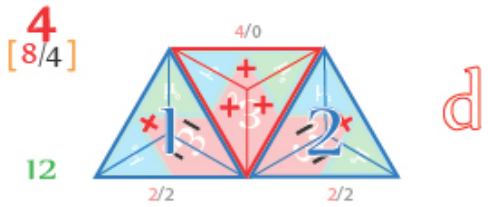
Gluons in Fermions

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 they are Neutral Tetryons comprised of
equal Positive & Negative charges and are elementary Matter particles

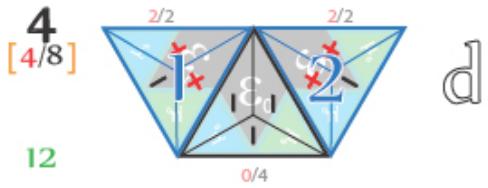
'Gluons' are neutral Tetryons

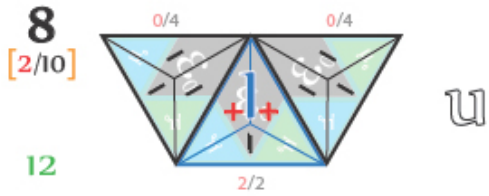




$$4\pi_{\text{Gluons}}\left[\left[\varepsilon_0\mu_0\right].\left[mAv^2\right]\right]$$

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





UP Quarks have
1 Gluon
[Neutral Tetryons]

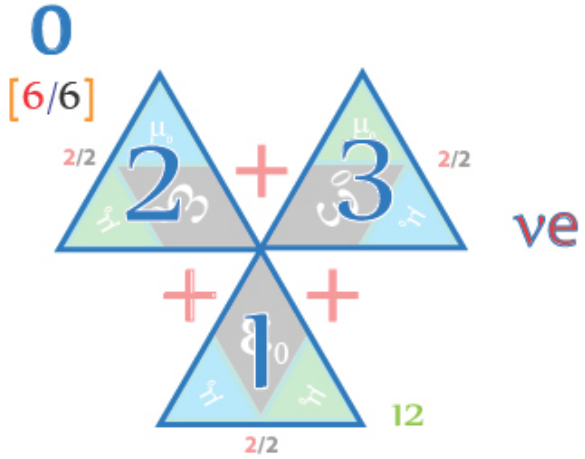
anti-DOWN Quarks have
2 Gluons
[Neutral Tetryons]

In all charged Matter neutral Tetryons (Gluons) perform the function of a di-electric

DOWN Quarks have
2 Gluons
[Neutral Tetryons]

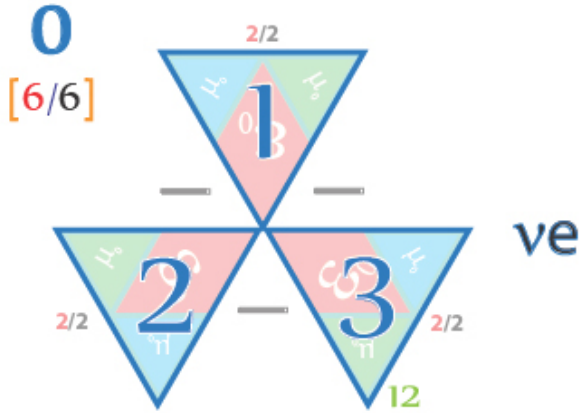
anti-UP Quarks have
1 Gluon
[Neutral Tetryons]

Neutrinos are 3 Gluon sets



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

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

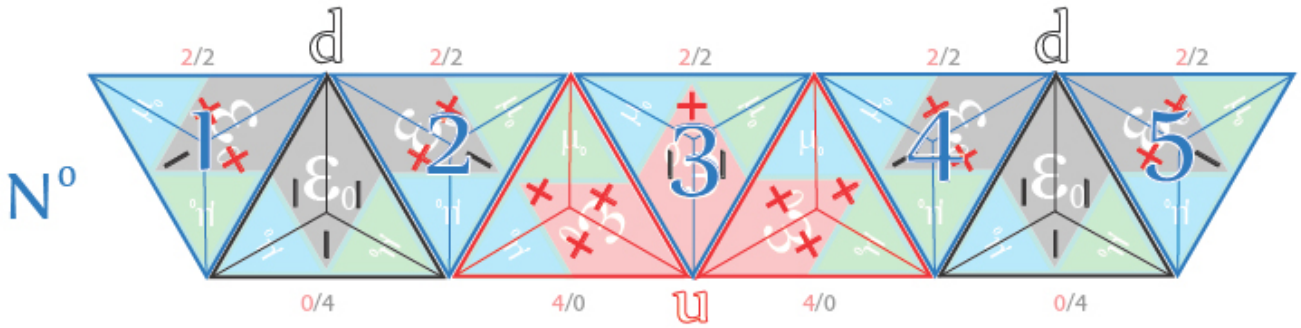


Baryonic Gluons

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 color 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 color 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 geometry and properties, along with their role in particle genesis



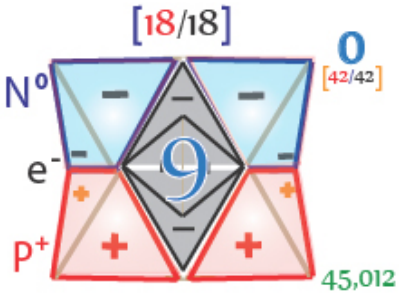
0

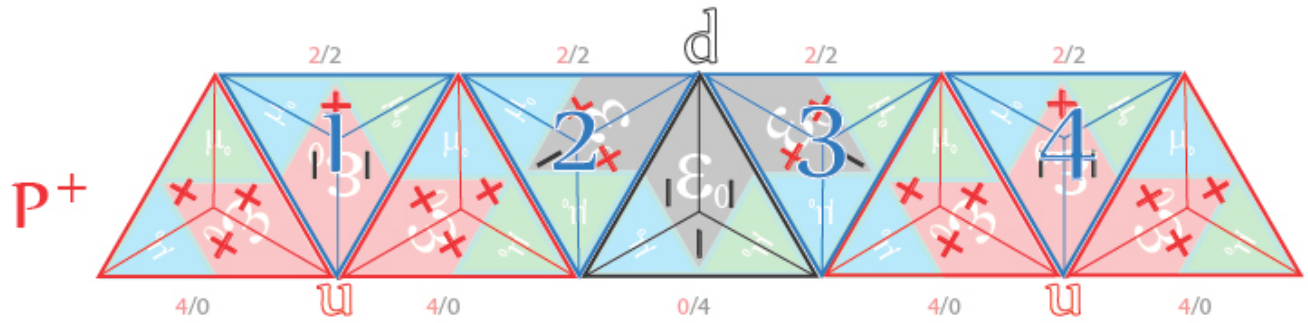
[18/18]

Neutrons have 5 Gluons

[Neutral Tetryons]

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





12

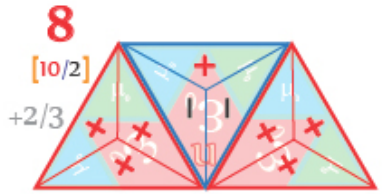
[24/12]

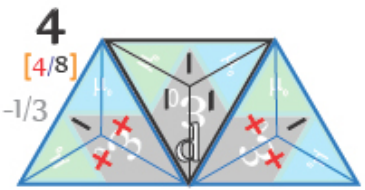
Protons have 4 Gluons

[Neutral Tetryons]

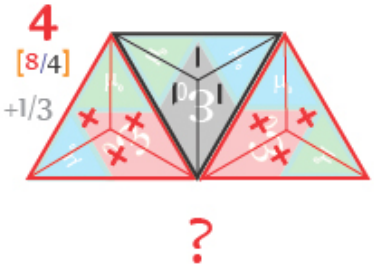
Non-gluonic Baryon formation

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

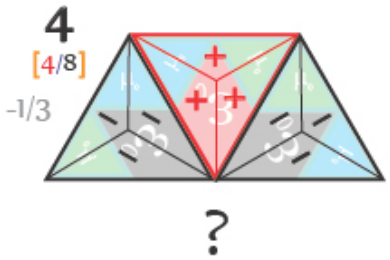




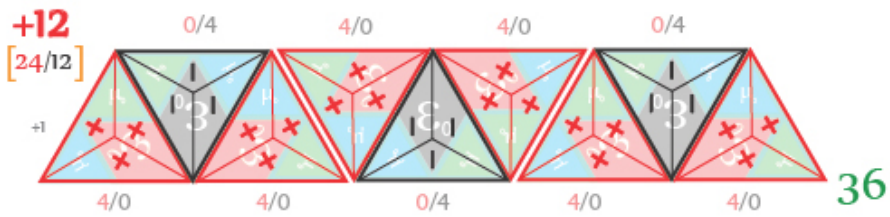
Non-neutral 'DOWN' quark has +4 charge as opposed to -4 charge of DOWN quark



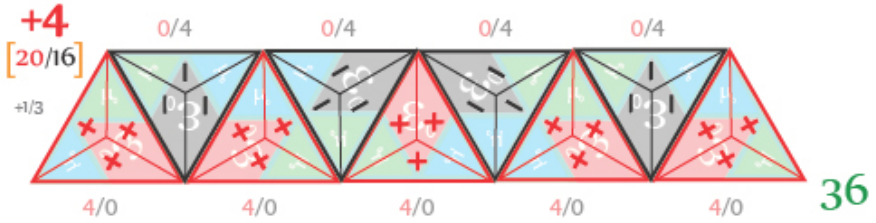
Baryonic Particles can be formed with non-neutral dielectric Tetryons in lieu of the usual neutral Tetyrons [Gluons] - altering the nett charges of the quarks formed



+4 +4 +4



+4 -4 +4



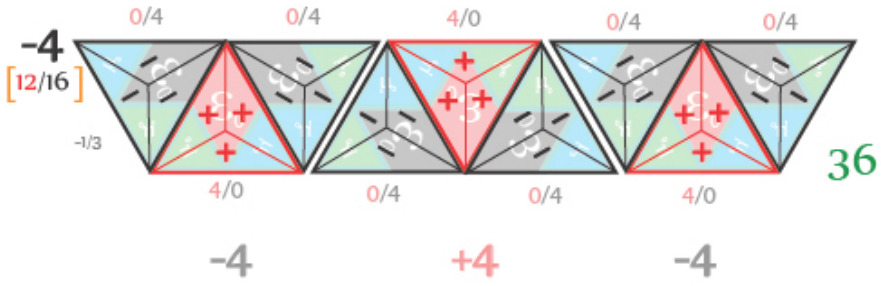
Un-stable form

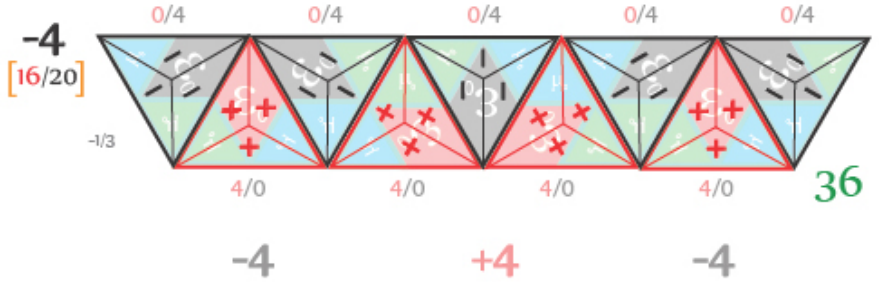
[rapidly decays into constituent Quarks]

Resulting in CHARGED Baryonic forms

Stable Form

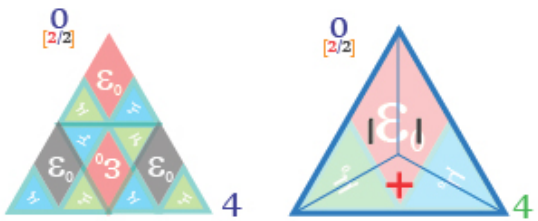
[possibly mistakenly viewed as Bottom Quarks]



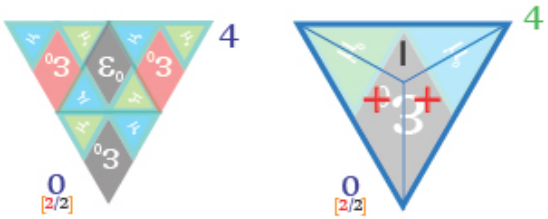


‘Glueballs’

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



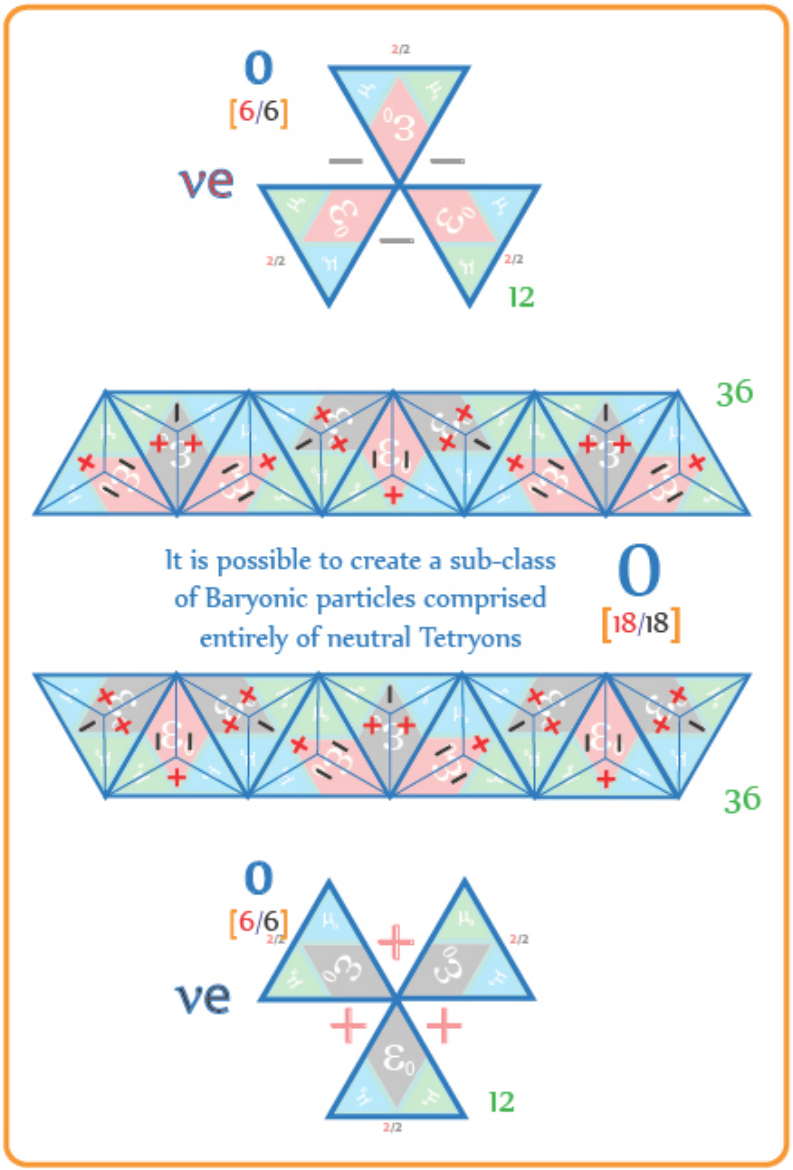
Neutral Tetryons
are the result of equal
charge EM fields combining to
form neutral Tetryonic geometries



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 geometry can be formed comprised entirely of Neutral Tetryons

Note: Despite total neutral charge
Glueball geometries are polarised

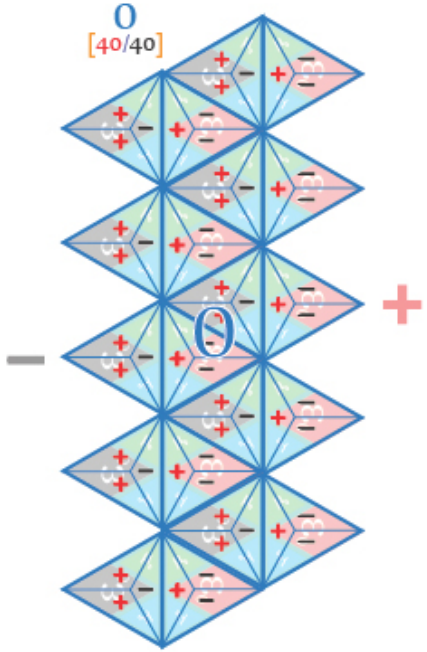
Neutrinos and some exotic neutral Baryons
can be considered to be ‘Gluon geometries’

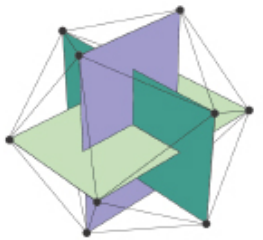


Neutrons are not considered to be Glueballs
as they contain charged Tetryons

OMEGA Particle
Icosahedron Glueball

20 Neutral Teryons





The 3 internalised planes formed by
the external apex points correspond with
the 3 normal spatial dimensions

Proton
Hydrogen ion

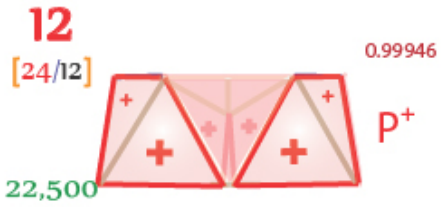
36

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 of +12 [24/12]

It attracts electrons [0/12] and Neutrons [18/18] in order to reach Tetryonic 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

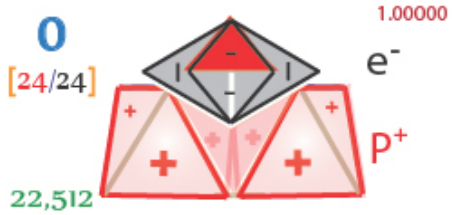
48

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 Baryon
formed in the creation of Matter

It is a [24/24] balanced (Neutral) Tetryonic charge

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

Deuterium

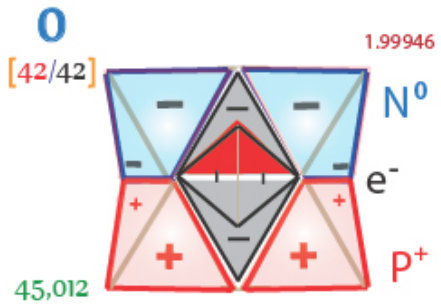
84

1 Proton 24/12
1 Neutron 18/18
1 Electron 0/12

Total Charge 42/42 [0]

H2

N0 n=25
P+ n=25
e- n=1



Deuterium

Deuterium has the same nett Tetryonic charge as Neutral Hydrogen but an increased Tetryonic mass (ZPF quanta Number)

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

It is a [42/42] Neutral Tetryonic charge
Deuterium nuclei combine to form all other elements

Tritium

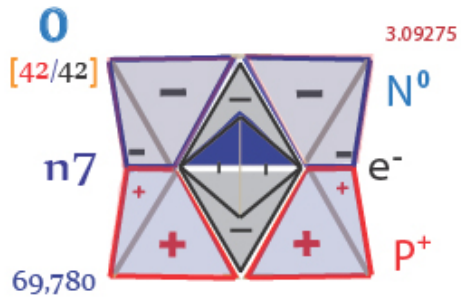
84

1 Proton 24/12
1 Neutron 18/18
1 Electron 0/12

Total Charge 42/42 [0]

H3

N0 n=31
P+ n=31
e- n=7
Radioactive Isotope



Tritium

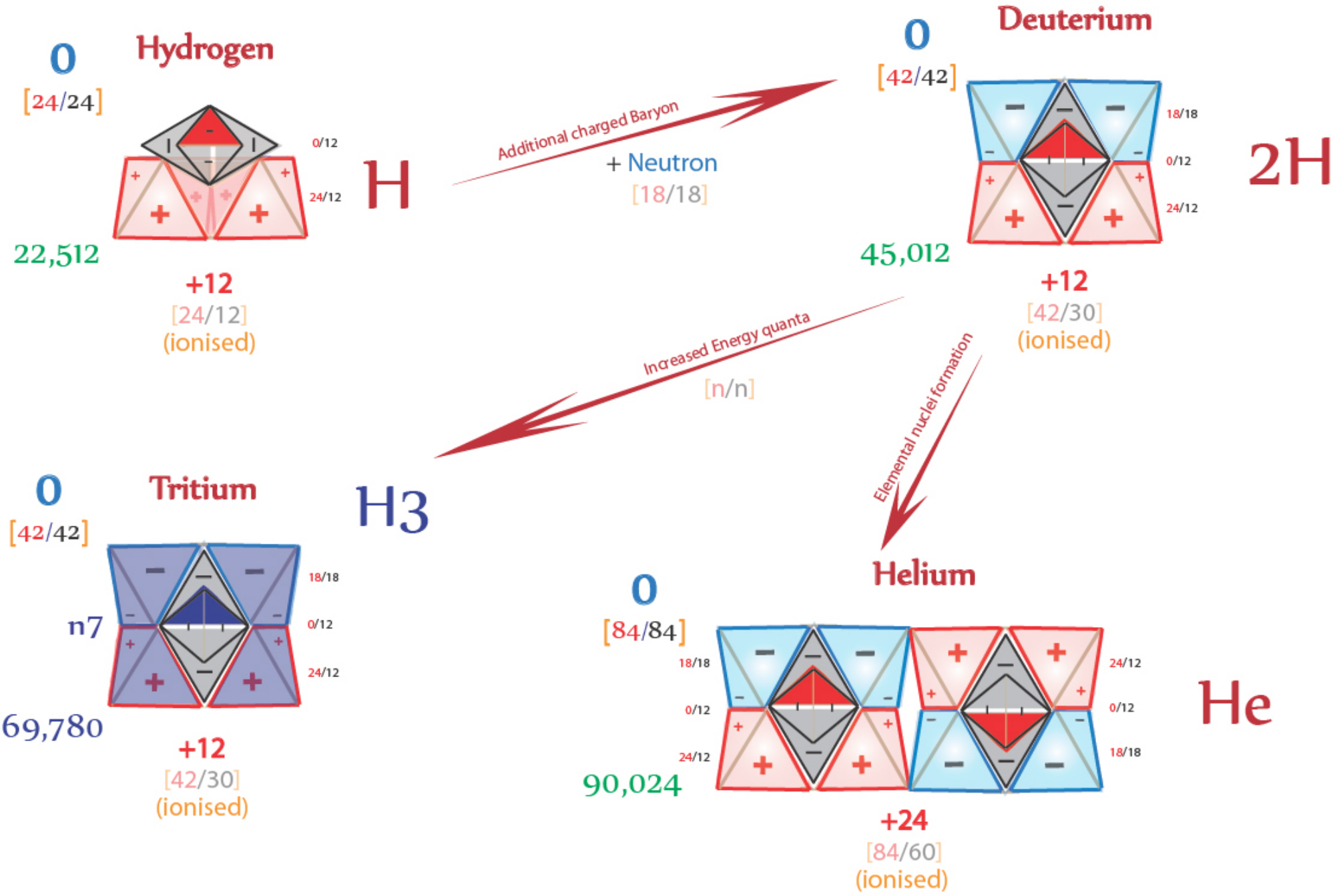
(Radioactive Deuterium)

Tritium has the same nett Tetryonic charge as Neutral Hydrogen and Deuterium (H2) but due to its higher quantum energy levels it has an increased total atomic mass-Energy

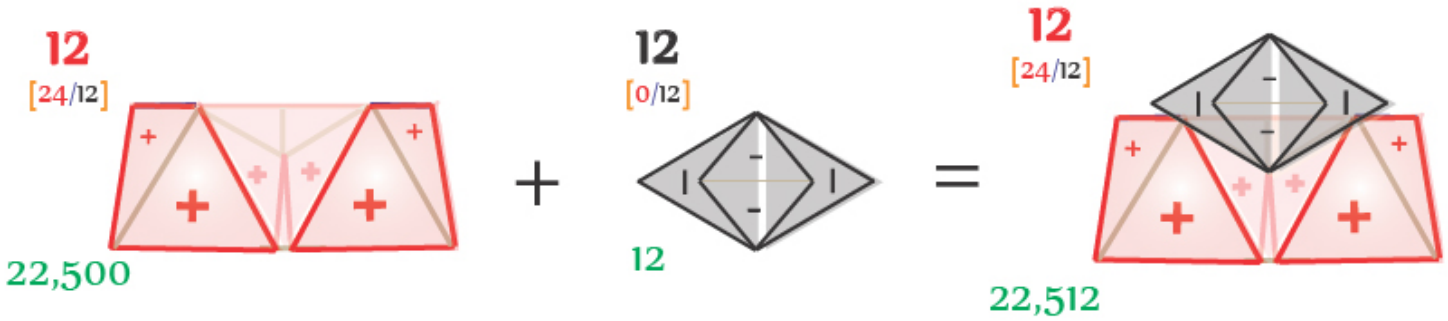
It has the same 84 Tetryonic Charges in its nucleus as Deuterium but its increased 'mass-Energy' is equivalent to that of a Neutron.

This extra nuclear energy is the source of its radioactivity and is released as various decay particles over time

Hydrogen - Helium genesis

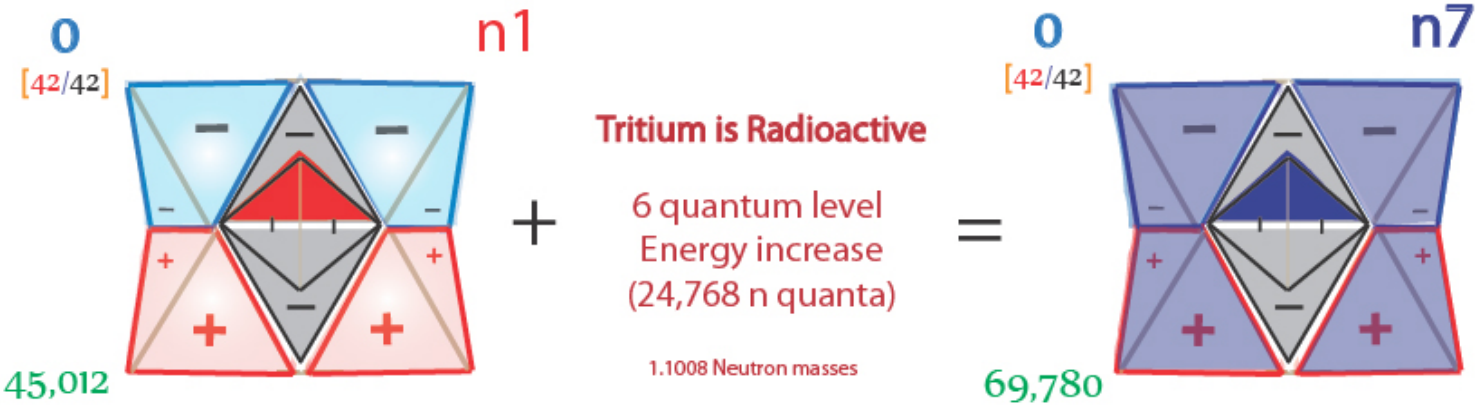


Hydrogen Family



Proton	Electron	Hydrogen
36π	12π	48π

Hydrogen	Neutron	Deuterium
48π	36π	84π



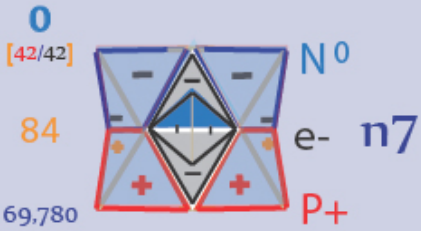
Deuterium	Tritium
84π	84π

Hydrogen-Helium3 genesis

Elemental Form

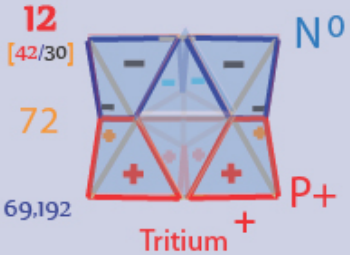
Hydrogen

Deuterium



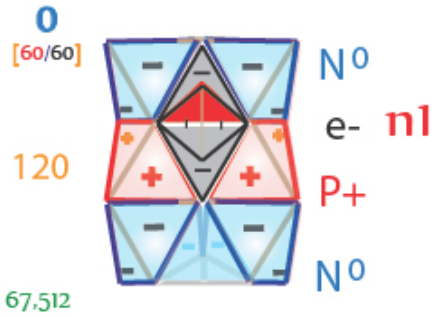
Tritium

Radioactive

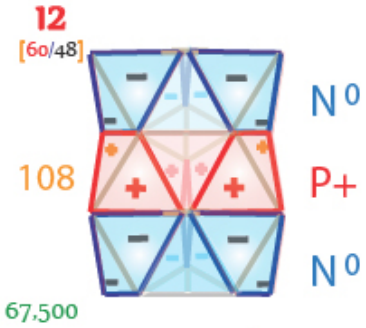


Tritium +

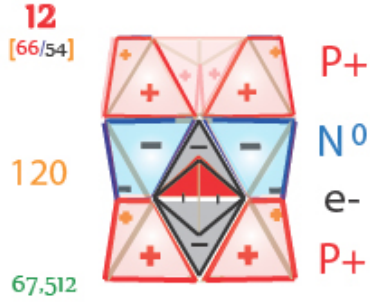
Tritium 0
is a non-radioactive allotrope of Tritium,
it has the same Tetryonic charge and mass-Energy as Helium 3
(but is ionically 1 elemental charge less than Helium 3)



Tritium 0



Tritium 0 +

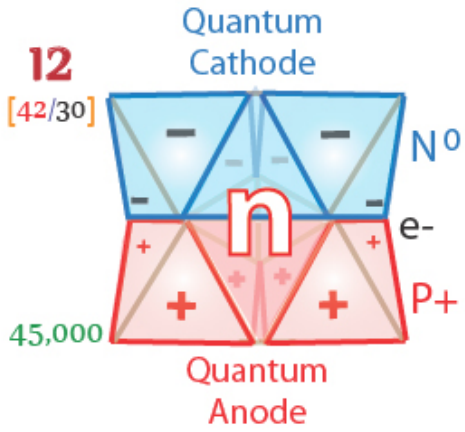


Helium 3

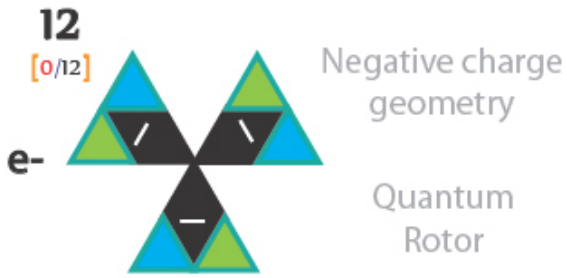
Helium 3

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



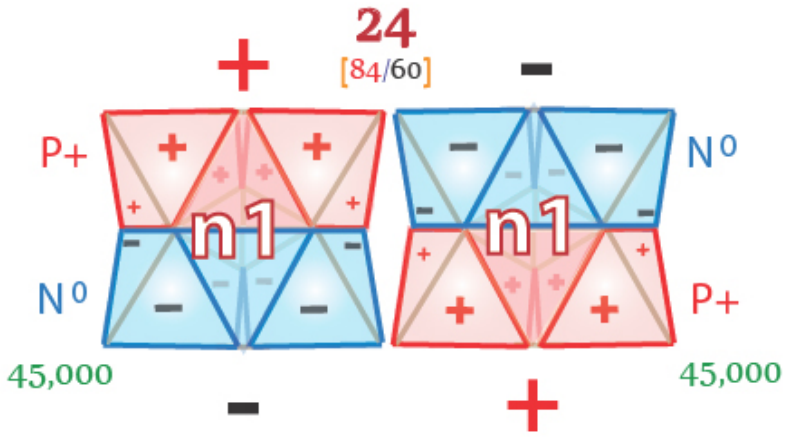
The quantum battery is unique in that in addition to storing energy indefinitely, when the nuclei combine with a Lepton it has the ability to release specific energies [Photons] by way of a Quantum Synchronous convertor geometry



12 loop quantum inductive rotor

Energy stored in quantum batteries is measured as mass

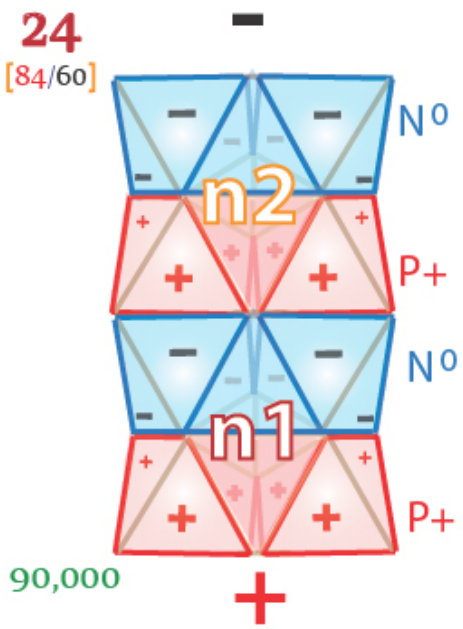
(Atomic Nuclei)



anti-Parallel Configuration

The non-neutral charge of nuclei attract free leptons into 'bound' states within their various nuclear levels releasing energy as spectral photons

Series Configuration



Quantum Convertors

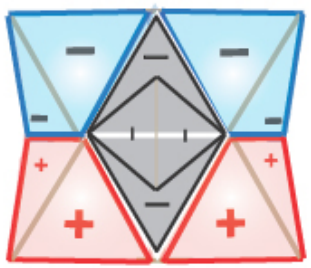
The electron can be viewed as
a rotating inductor consisting of
3 negative Tetryons

$$12\pi \text{ Leptons } \left[\left[\varepsilon_0\mu_0\right].\left[mAv^2\right]\right]^{n8}_{n1}$$

EM Field — Planck quanta — ElectroMagnetic — mass — velocity

The electron has a Tetryonic
geometry that is electrically
equivalent to a 6 loop inductive rotor

Quantum
Cathode



Quantum
Anode

$$72\pi \text{ Nuclei } \left[\left[\varepsilon_0\mu_0\right].\left[mAv^2\right]\right]^{n32}_{n25}$$

EM Field — Planck quanta — ElectroMagnetic — mass — velocity

With the addition of a rotor (modelled on a Lepton) a quantum battery can
be converted from a storage device into a Energy distibution device.

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

$$84\pi \text{ Deuterons } \left[\left[\varepsilon_0\mu_0\right].\left[mAv^2\right]\right]^{n32}_{n25}$$

EM Field — Planck quanta — ElectroMagnetic — 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

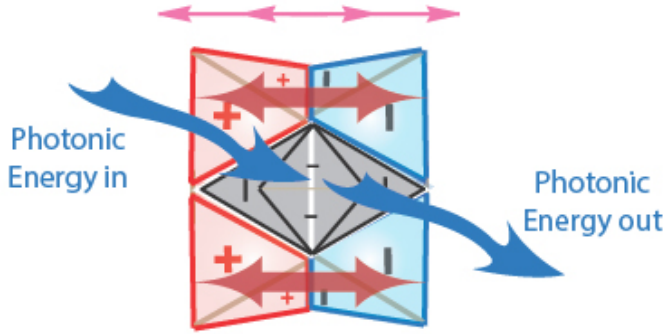
Changes in Baryonic energy levels induces a directly
proportional change in Electron energy levels

A quantum convertor can possess
3 types of energy

Angular Momentum (motional energy)
of Leptons and Atomic nulcei

Photonic Energy (emission/absorption)
Photon/Boson Energies

Intrinsic Nuclear Energy (stored energy quanta)
Leptronic/Baryonic Energies



Leptons rotate within the
Baryonic EM fields of the Nucleus

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 atom

Hydrogen Ionisation Energies

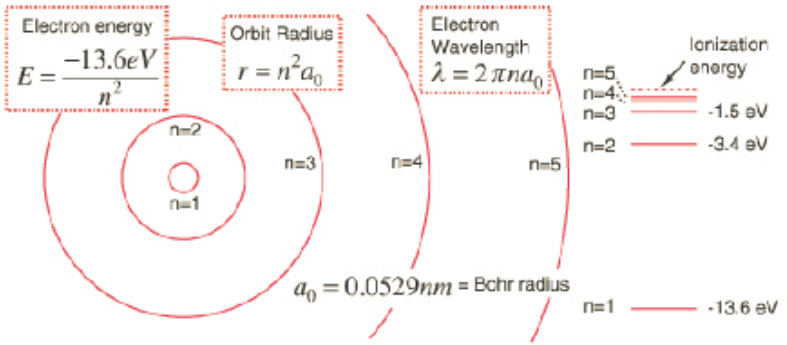
Energy in eV/n [quantum]
required to ionise a photo-electron

n8	En = -0.21 eV	84
n7	En = -0.27 eV	49
n6	En = -0.37 eV	36
n5	En = -0.54 eV	25
n4	En = -0.84 eV	16
n3	En = -1.50 eV	9
n2	En = -3.4 eV	4
0		
n1 [24/24]	En = -13.6 eV	1

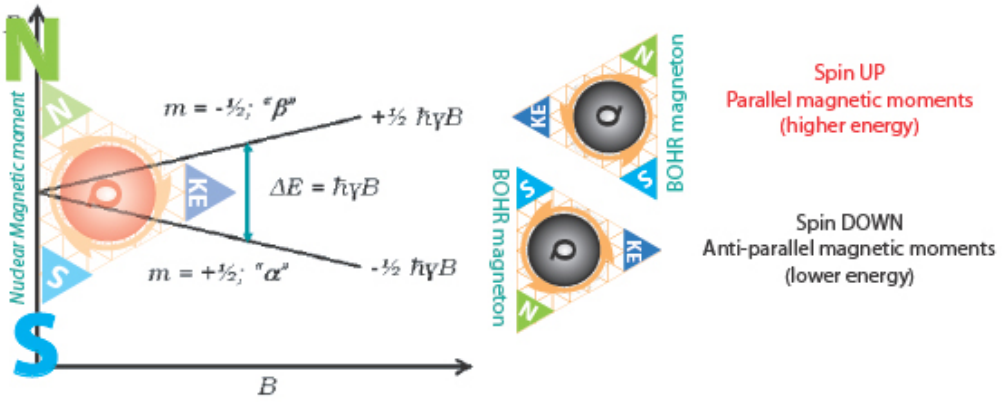
22,512

Hydrogen

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 Couloumbic attraction.



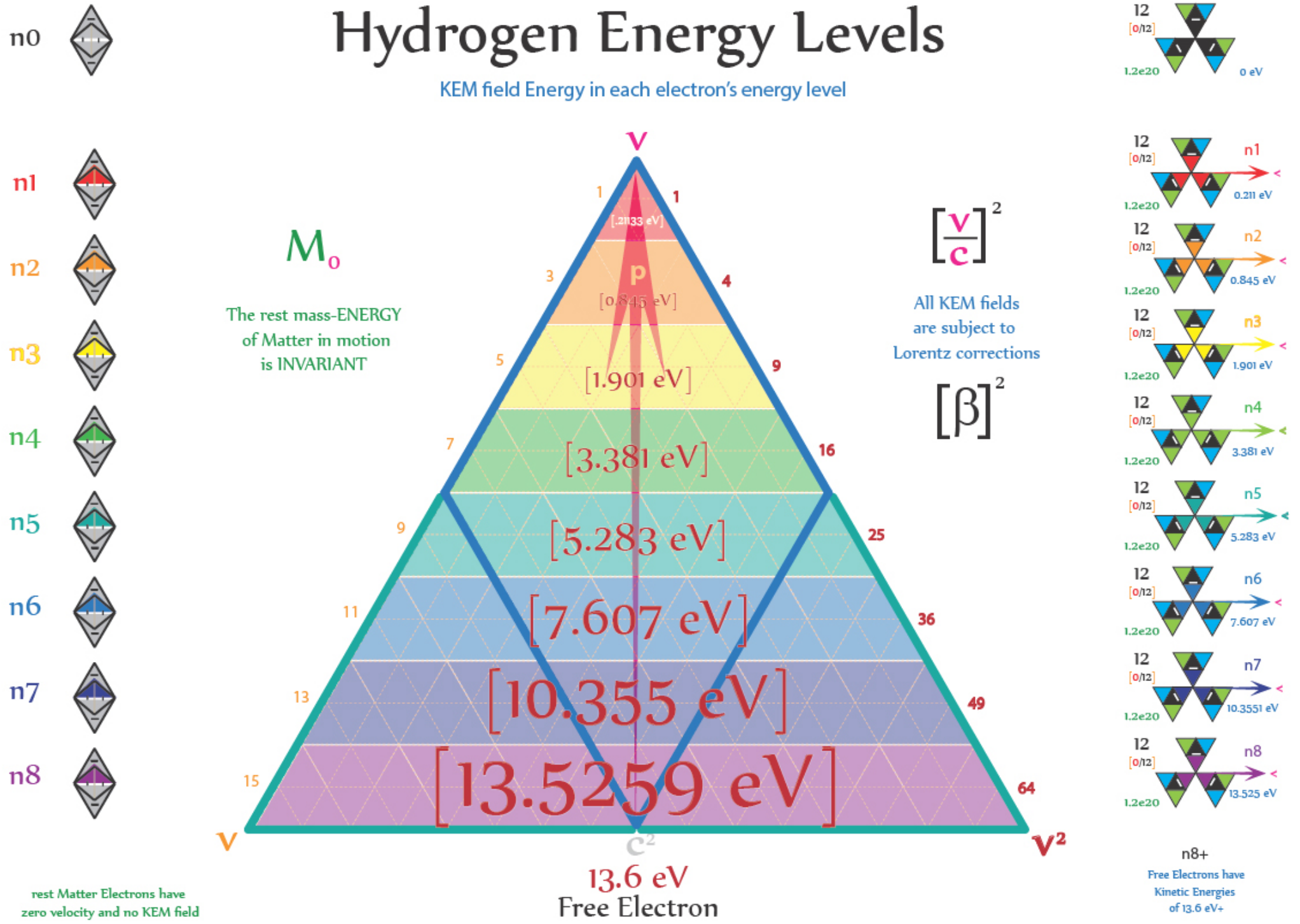
S up

The intrinsic magnetic moment of the rotating electron couples with the nuclear magnetic moment to produce a split in the resulting spectra energies produced by quantum level transitions

S down

Hydrogen Energy Levels

KEM field Energy in each electron's energy level



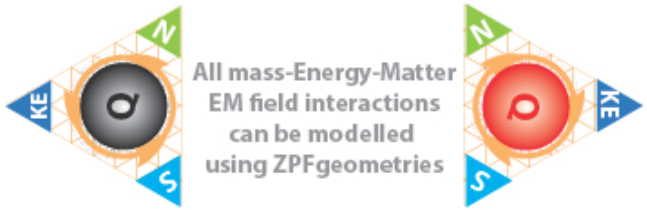
Electro-Magnetic Fields

Quantum Charge
is determined by the nett geometry formed
by equilateral Zero Point Field EM [mass-ENERGY] quanta
and can be modelled with circular energy flux rotations

Positive Charge ZPF

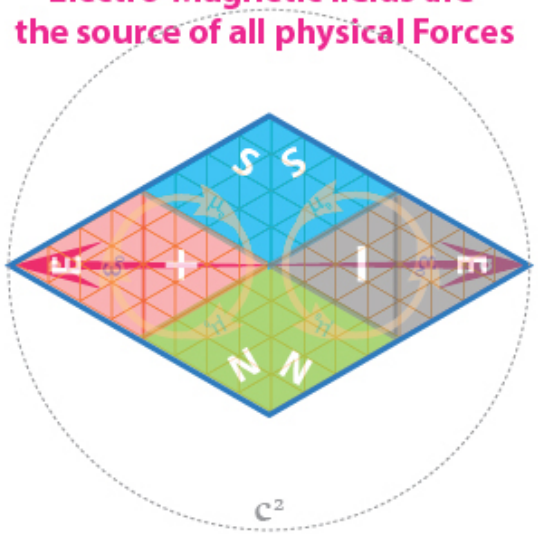
Magnetic Monopoles do NOT exist

Negative Charge ZPF



All mass-Energy-Matter
EM field interactions
can be modelled
using ZPFgeometries

Electro-Magnetic fields are the source of all physical Forces



The geometry of all EM fields is determined by Electric Permittivity and Magnetic Permeability

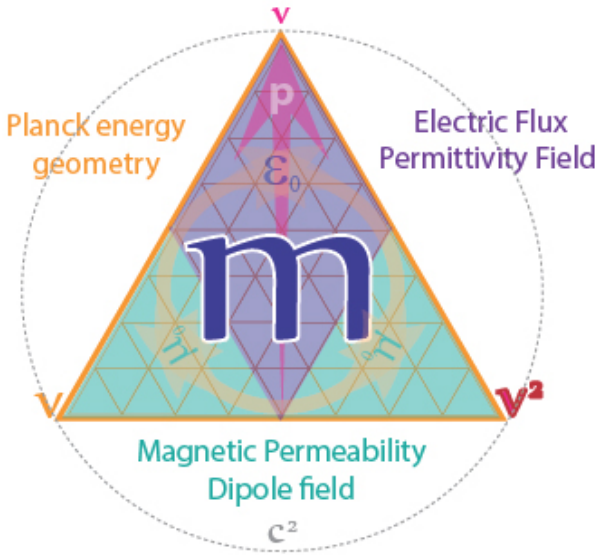
ε_0 μ_0

The EM field is a Transverse waveform with the Magnetic field always at 90 degrees to the Electric

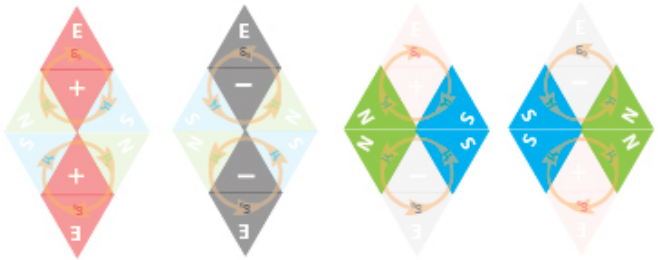
The Magnetic fields propogate bi-directionally and the Electric field is responsible for producing linear momentum

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

The 'zero point' EM field has equilateral geometry

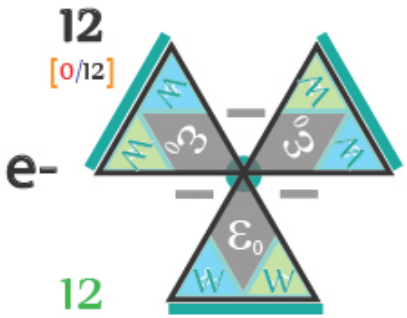


Zero Point fields are polarised and are the sources of



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

Weak Force

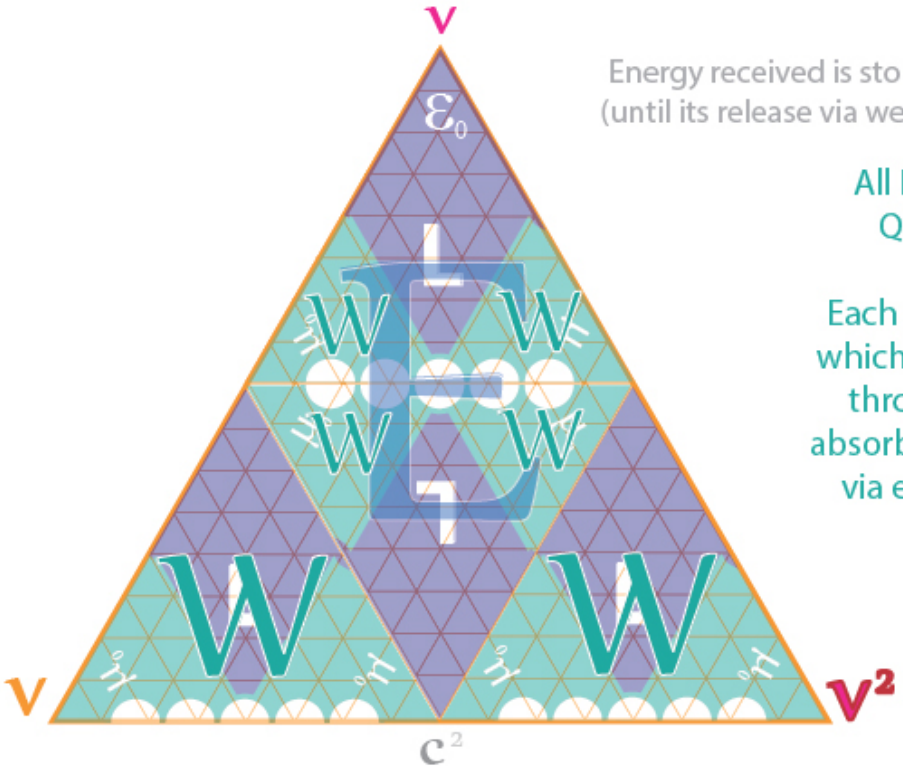


6 Inductive 'Weak' edges
(3 internalised)
(3 externalised)

Leptons and Quarks
have the same Tetryonic numbers
but differing resulting geometries

Quantum Inductive loops

Quantum Tank circuit

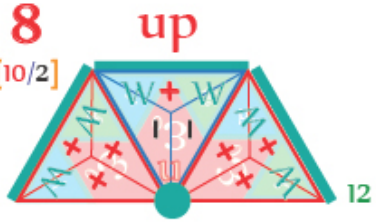


Energy received is stored in Quantum Inductive Loops
(until its release via weak interaction - Boson exchange)

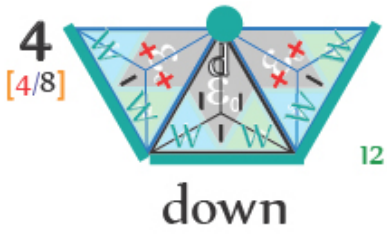
All ElectroMagnetic fields are
Quantum Inductive loops

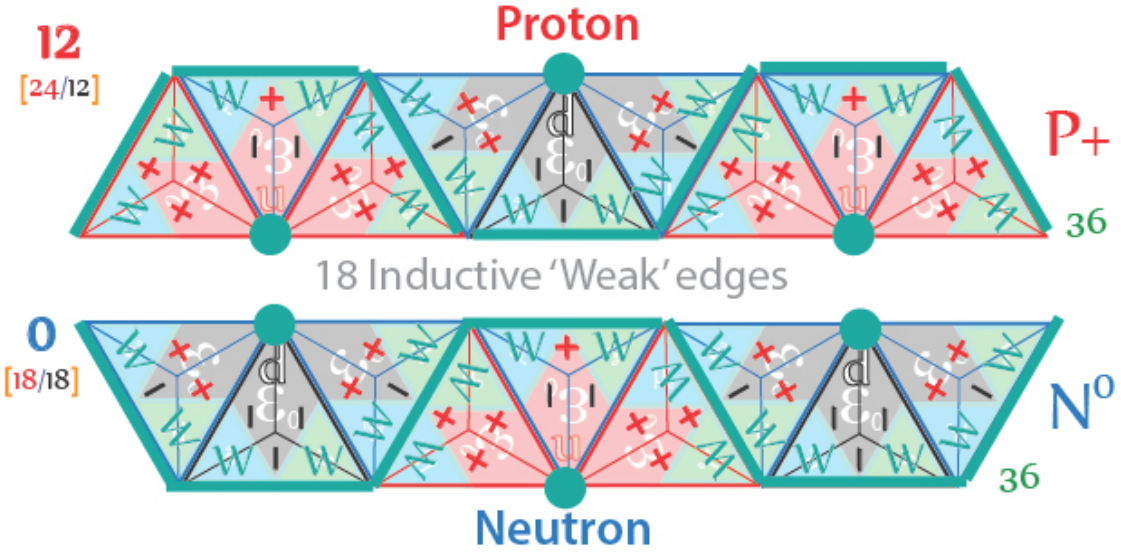
Each has a Magnetic edge (base)
which acts as a quantum inductor
through which energy can be
absorbed or released in EM quanta
via electro**Magnetic** induction
[exchange Bosons]

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



6 Inductive 'Weak' edges

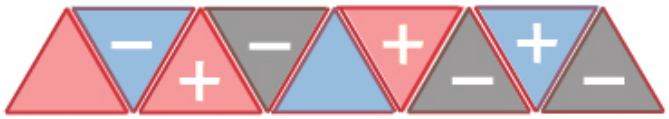




Strong Colour Force

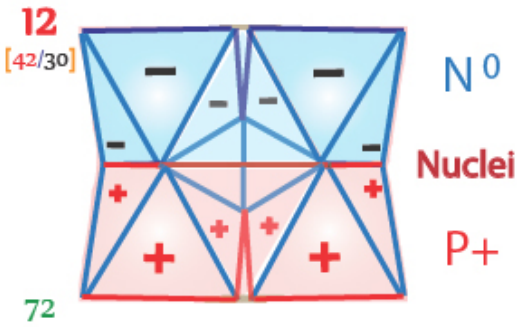
The force resulting from the interaction of 2 Tetryons
along their planar (Electric charge) surfaces

Tetryonic Fascia (Planar Electric Charge) interaction

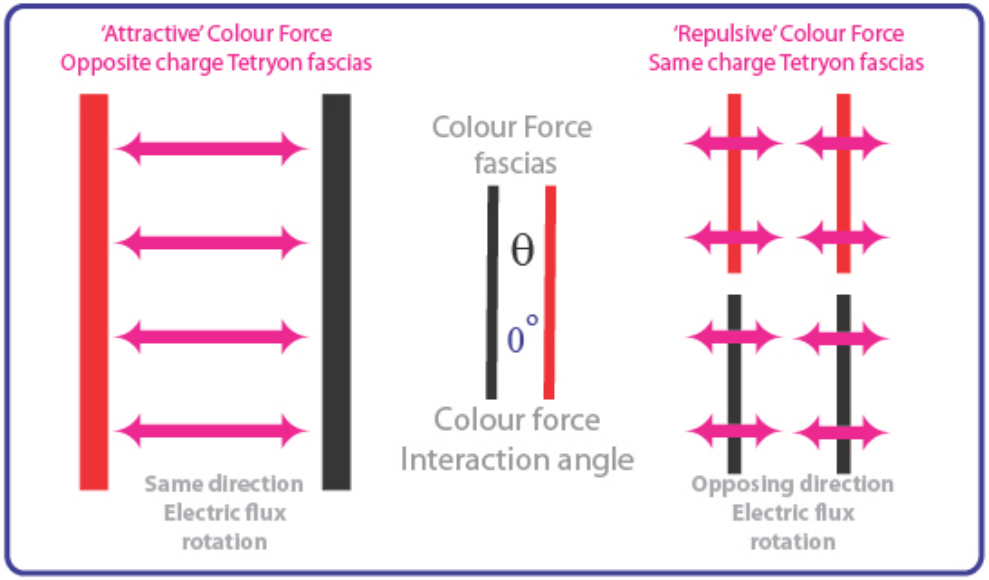


It interacts through oppositely charged Tetryon Fascias
in contact with each other in all Matter (save Leptons)

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

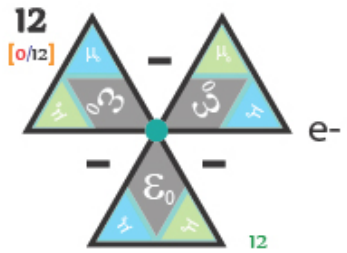


Leptons are 'held together'
by a radial Weak Force axis

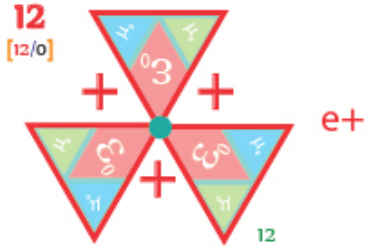


Strong Force strength is directly proportional to the nett mass-Energy quanta involved
(Increases/decreases as total Tetryon mass-Energy quanta increases/decreases)

Leptons
Colour Repulsion Force

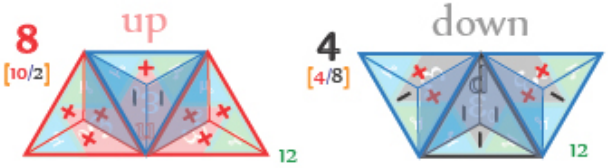


0 Fascia 'Colour' Attraction



Colour force is NOT attractive in Leptons
(Lepton nuclear geometry is a result
of Repulsive Colour Force)

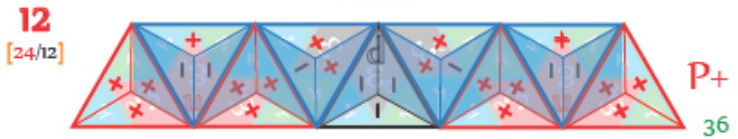
Quarks
Colour Attraction Force



Quarks
4 Fascia 'Colour' Attraction

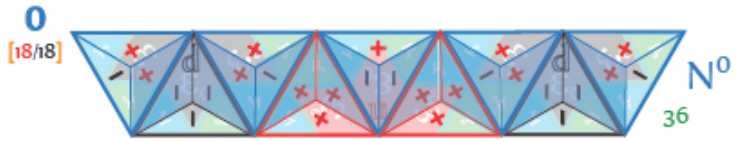
Quarks are Leptons
with alternative geometries
resulting from the colour force

Proton



Baryons
Colour Attraction Forces

Baryon formation
16 Fascia 'Colour' Attraction

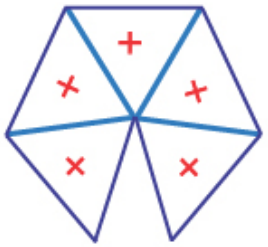


Neutron

Strong Force Interaction

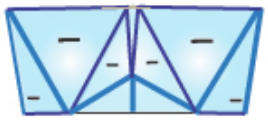
On the smallest scale (less than about 0.8 fm), it is the Electric force (mediated by gluons in nuclei) that holds Tetryons together in order to form Quarks, Protons and Neutrons

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

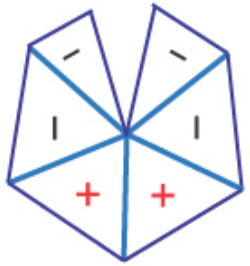


0
[18/18]

Neutron

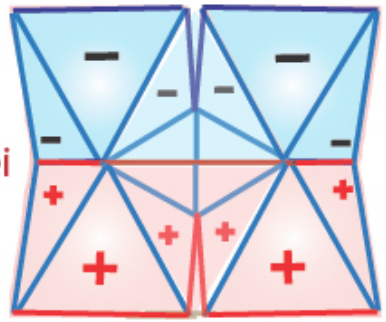


36

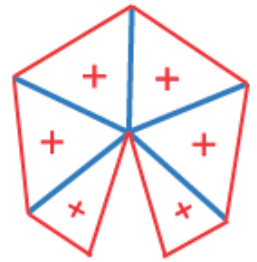


12
[42/30]

Nuclei



72



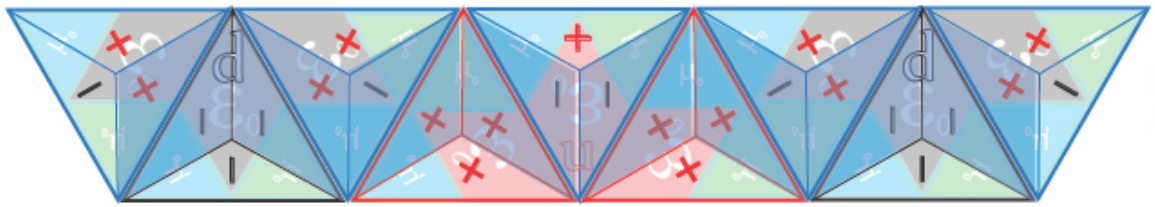
12
[24/12]

Proton

36

Attractive Colour Charge Force holding Quarks and Nuclei together

0
[18/18]

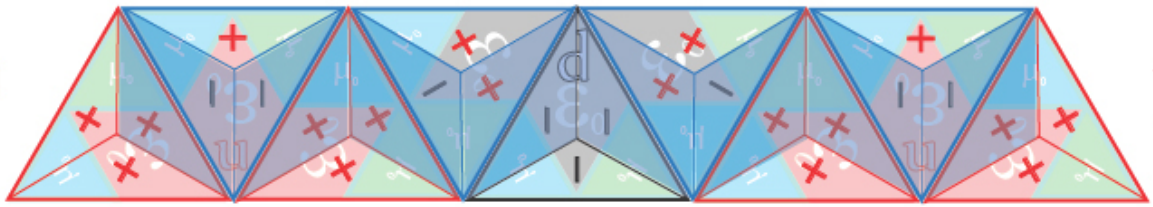


N^0

32 charged fascia interactions

Atomic Nucleus

12
[24/12]



P^+

12
[42/30]

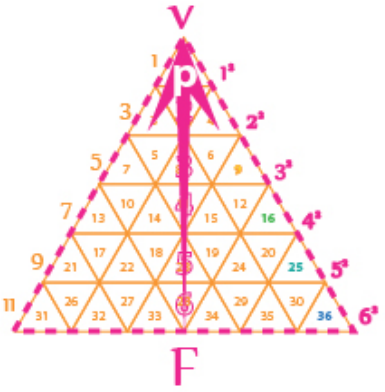
It acts as a repulsive force in Leptons

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

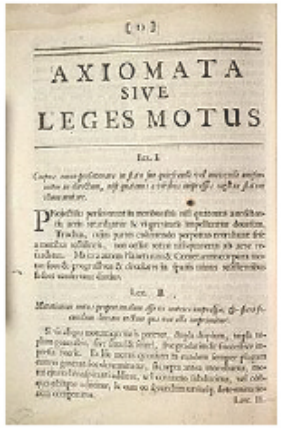
[Inertial Frame MINUS 13 quanta]



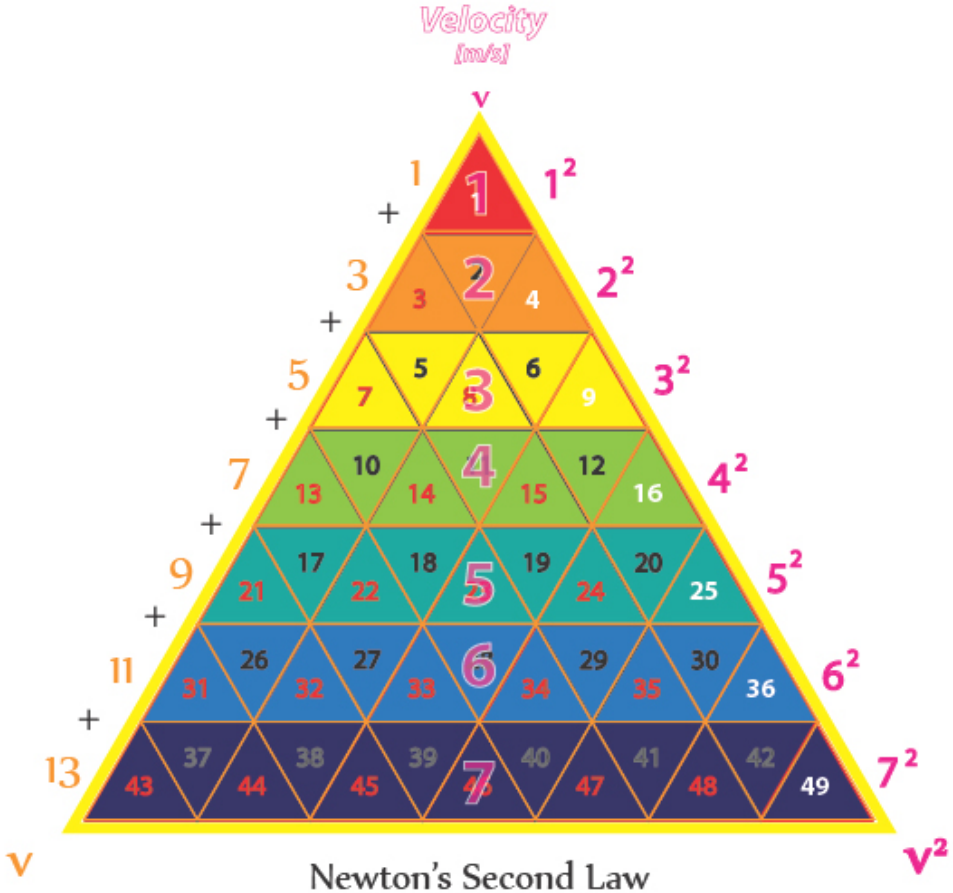
Newton's First Law

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

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



Philosophiae Naturalis Principia Mathematica



Newton's Second Law

Any change in Momentum over Time equals Force

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

A body of mass (m) subject to a net force Force (F) undergoes an acceleration (a) 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

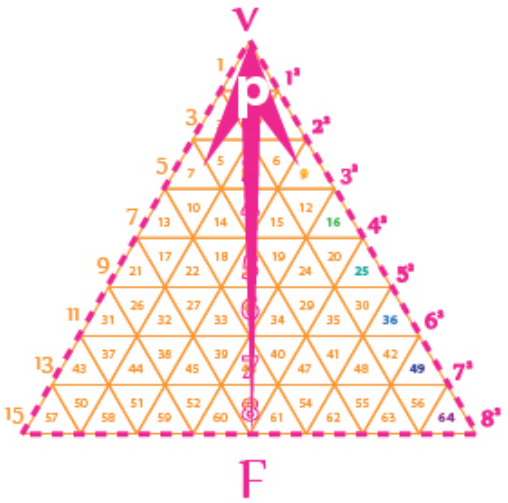
(25 December 1642 – 20 March 1727)

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

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

Acceleration

[Inertial Frame PLUS 15 quanta]



$$F = -G\frac{m_1 m_2}{r^2}$$

Law of Attraction

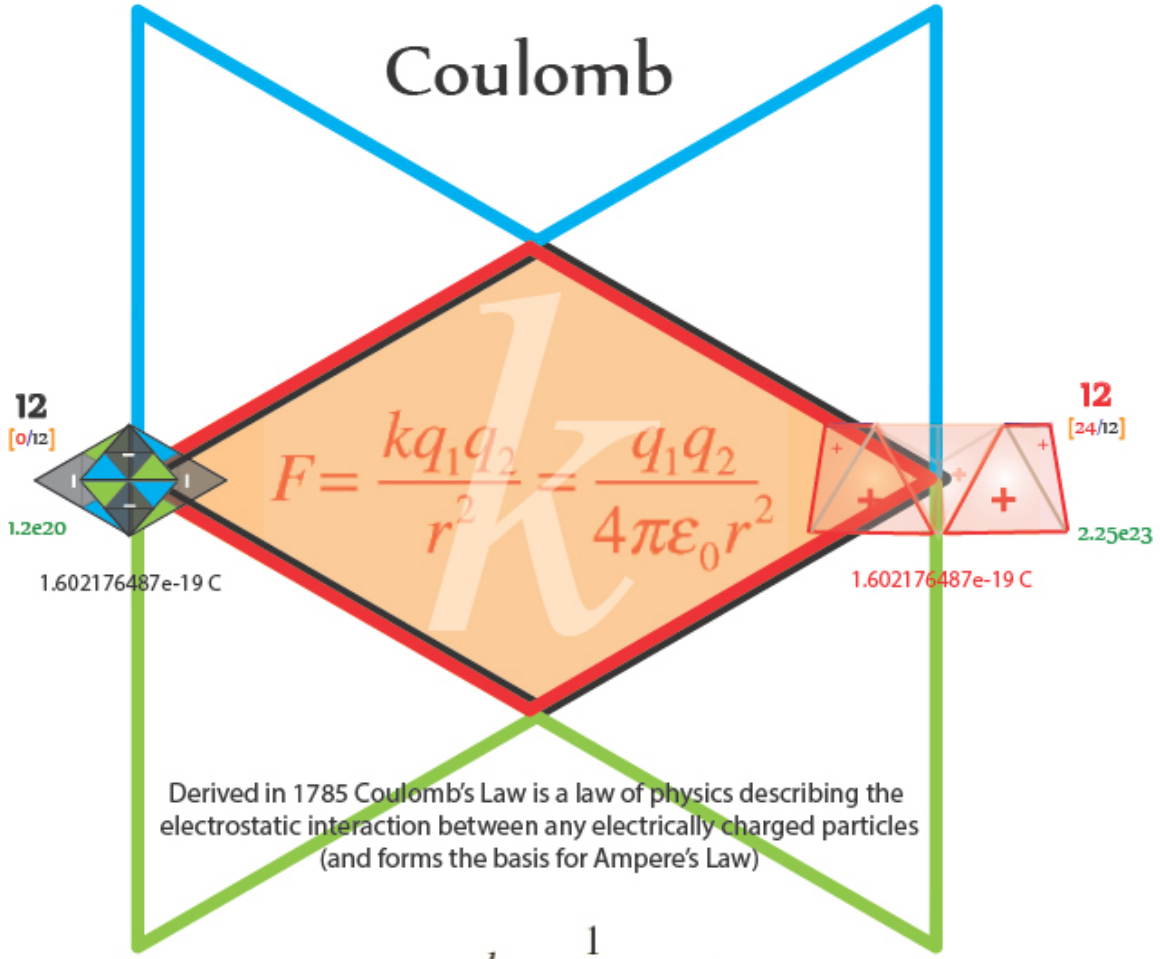
Like the gravitational force derived 100 years earlier by Newton, the Coulomb force is an inverse square law.

Unlike the gravitational force however, the Coulomb (or electric) force may be either attractive or repulsive

Law of Interaction

$$F = k\frac{Q_1 Q_2}{r^2}$$

Coulomb



Derived in 1785 Coulomb's Law is a law of physics describing the electrostatic interaction between any electrically charged particles (and forms the basis for Ampere's Law)

Charles-Augustin de Coulomb

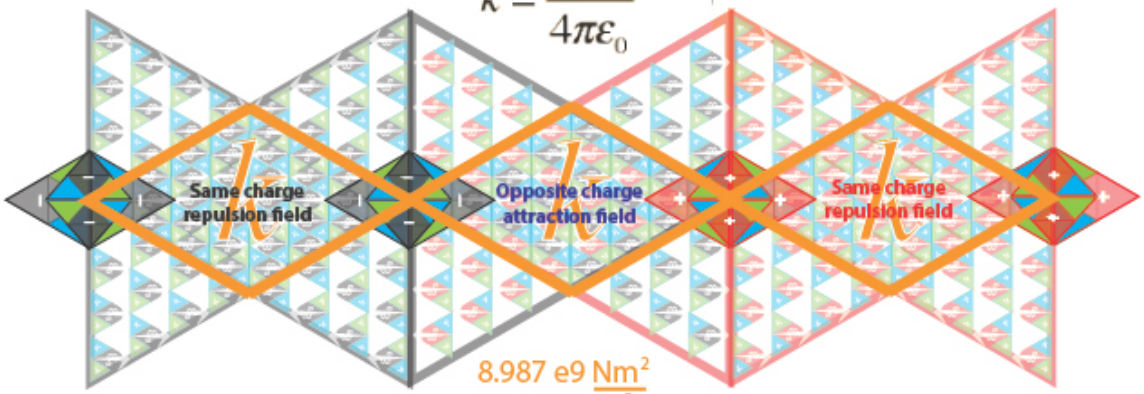
(14 September 1736 – 23 August 1806)

Coulombs

$$1\mathrm{C} = 1\mathrm{A} \cdot 1\mathrm{s}$$

As

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



$$8.987\ e9\ \frac{\mathrm{Nm}^2}{\mathrm{C}^2}$$

Amperes

$$1\,\mathrm{A} = 1\frac{\mathrm{C}}{\mathrm{s}}$$

$$\frac{\mathrm{C}}{\mathrm{s}}$$

The Coulombic force field is the result of super-positioned E-field energy momenta

$$F = ma$$

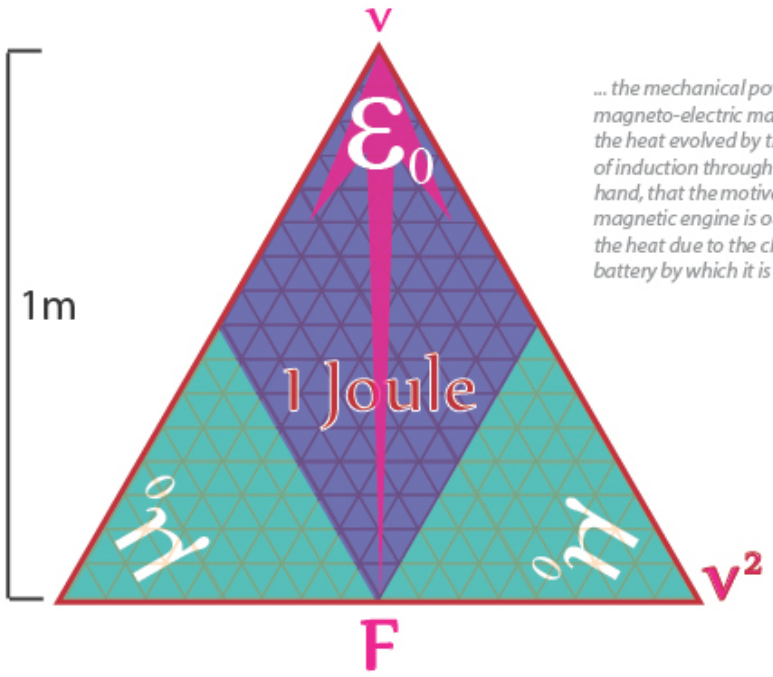
The vector-force on a particle equals the product of its mass and its vector acceleration

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

or.....the Energy-Momenta available in a c^2 geometry able to do work

$$n\pi \left[\left[\varepsilon_0 \mu_0 \right] . \left[mAv^2 \right] \right]$$

nπ mass; $\varepsilon_0\mu_0$ ElectroMagnetic; EM Field; m mass; A velocity; v^2 Planck quanta



... the mechanical power exerted in turning a magneto-electric machine is converted into the heat evolved by the passage of the currents of induction through its coils; and, on the other hand, that the motive power of the electro-magnetic engine is obtained at the expense of the heat due to the chemical reactions of the battery by which it is worked

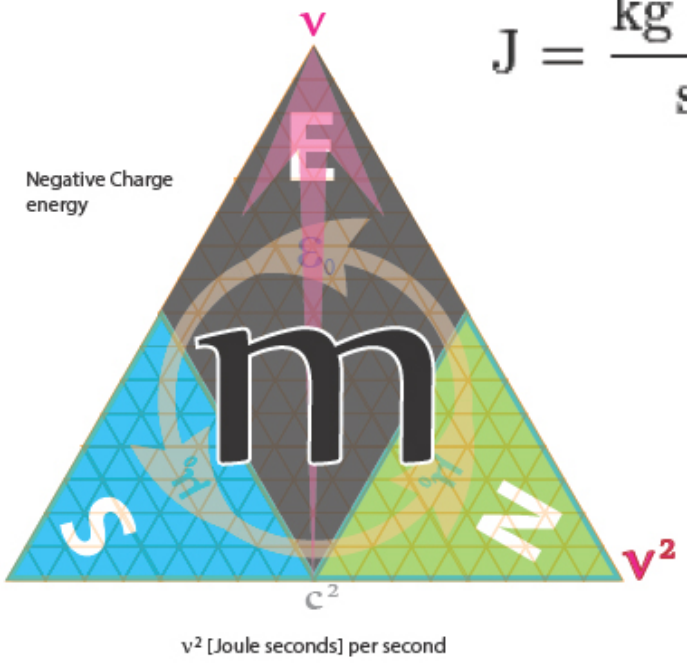
(1845)

James Prescott Joule

(24 December 1818 – 11 October 1889)

Note: The direction of Force within energy geometry is UNIDIRECTIONAL
ie Deceleration can be caused by Positive or Negative momenta

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



Negative Charge energy

v^2 [Joule seconds] per second

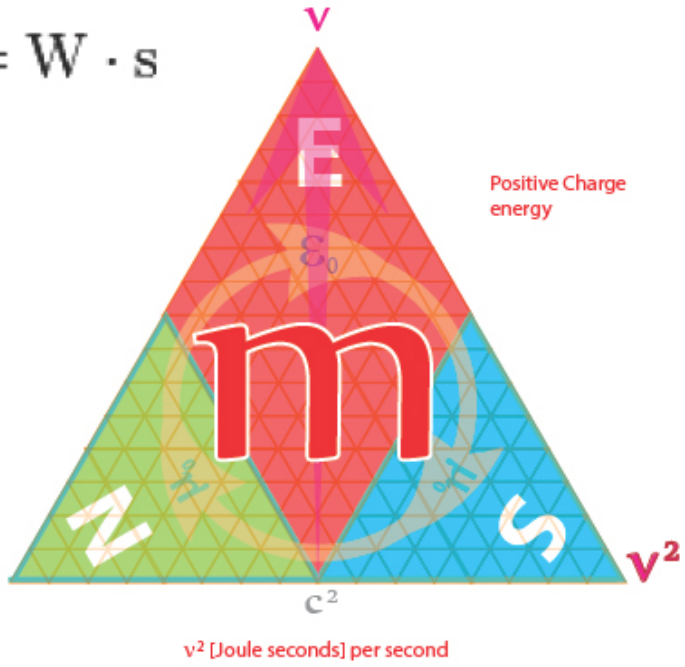
Energy $kg.\frac{m^2}{s^2}$

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)

Planck's Constant x frequency $\left[kg.\frac{m^2}{s}\right].s^{-1}$

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

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



Positive Charge energy

v^2 [Joule seconds] per second

Inertia and Force

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

$$p = mv$$

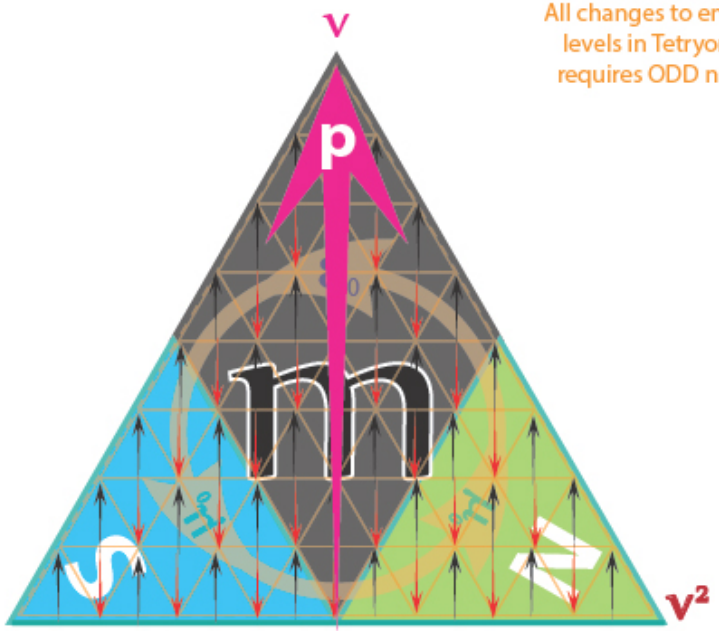
momentum

Any change to the Energy-momenta (mass-velocity) content of a closed inductive loop requires a proportional change to the loop's energy density [all inductive loops resist changes to their energy levels]

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

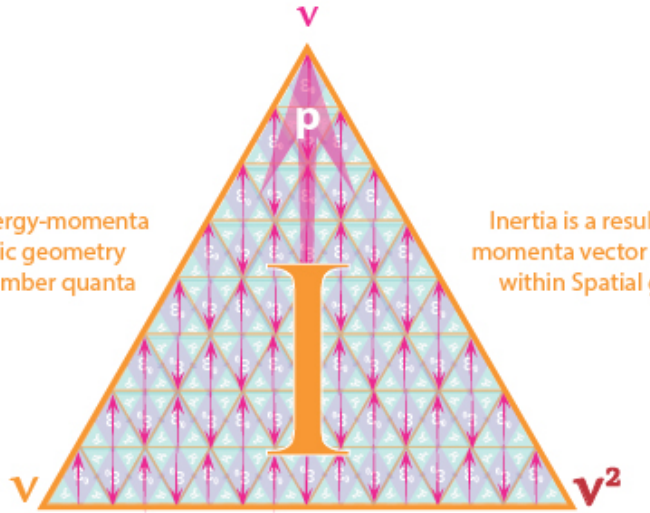
$$F=ma$$

Force



p

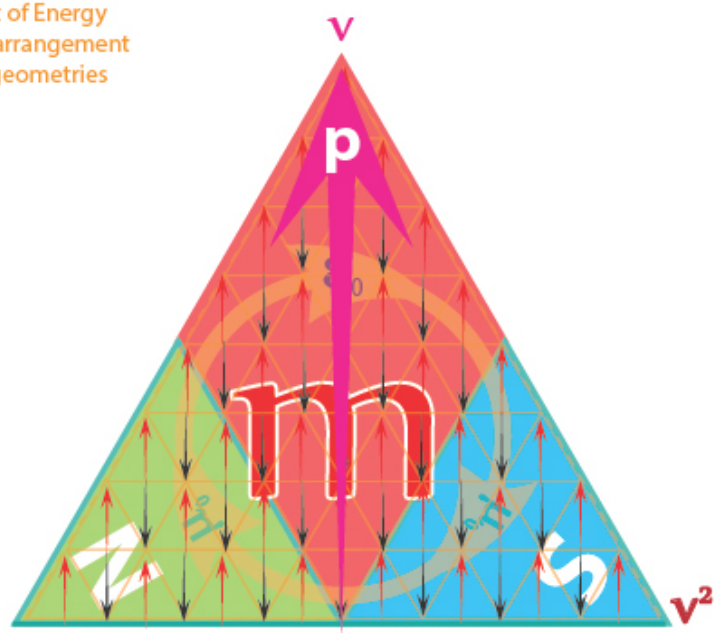
All changes to energy-momenta levels in Tetryonic geometry requires ODD number quanta



[v/v]

Inertia is a result of Energy momenta vector arrangement within Spatial geometries

Any change in the Energy-momenta content or the forces acting on a massive body results in a proportional change in velocity



F

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 are used to describe the motion of matter and how it is affected by applied forces

Momentum is the nett square root of mass-Energy quanta

Force is the linear sum of mass-Energy momenta quanta

Linear Momentum

is the linear EM force resulting from
scalar mass-Energies in motion

Linear Momentum is the geometric
intrinsic vector component of Force

$$p = mv$$

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

$$\sum \mathbf{F} = \frac{\mathrm{d}\mathbf{p}}{\mathrm{d}t} = m\frac{\mathrm{d}\mathbf{v}}{\mathrm{d}t} + \mathbf{v}\frac{\mathrm{d}m}{\mathrm{d}t}$$

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

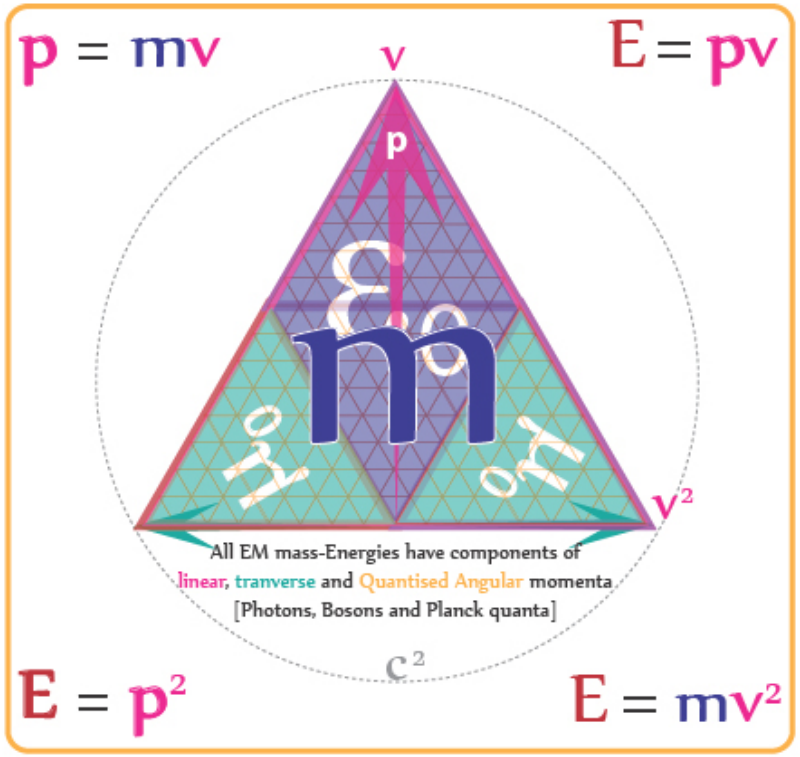
$$p = T\pi\frac{\left[\left[mAv^2\right]\right]}{v} = mv$$

(Planck quanta; mass; velocity)

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

$$\left[\sqrt{\left[mAv\right]^2}\right]$$

(Planck quanta; mass; velocity)



Linear Momentum is the square root of Tetryonic Energy and
is the Force vector resultant from any mass-Energy velocity

$$p = T\pi\left[\left[mAv\right]\right]$$

(Planck quanta; mass; velocity)

Tetryonic momentum

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

The Energy-momentum relation is a fundamental physical
relationship 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 EM 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

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

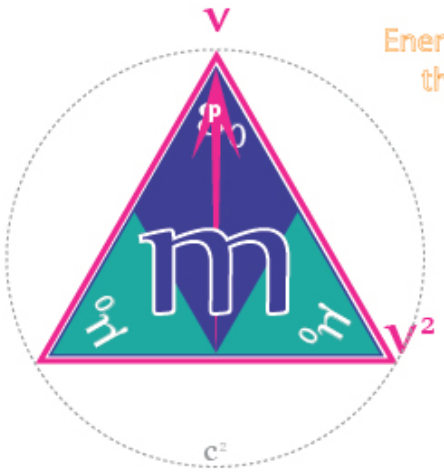
mass-Energy momentum

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

Classical formulation

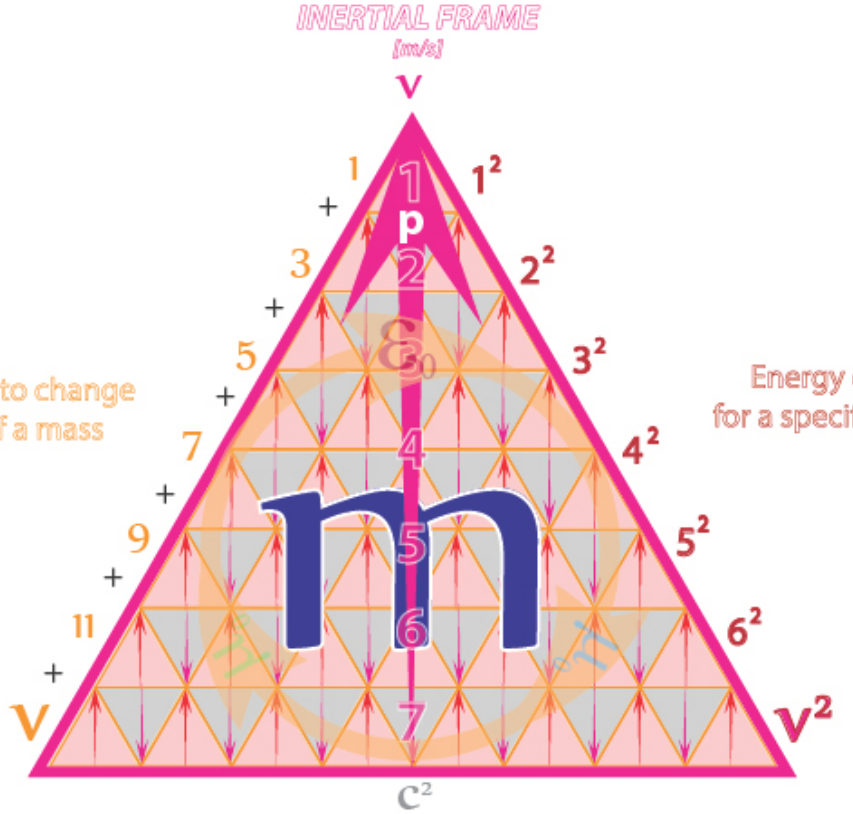
$$p = mv$$

Momentum is
the mass of Matter
times its velocity



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

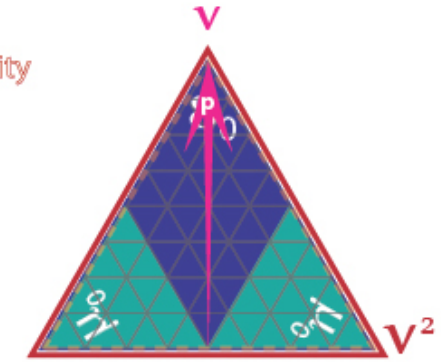
Energy required to change
the velocity of a mass



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

The linear momentum of a EM field or system of particles is
the vector sum of the momenta of all the KEM fields
of individual objects in the system
per unit time

Energy content
for a specific velocity



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

Quantum formulation

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

Momentum is
Energy content of Matter
divided by it velocity

$$p = T\pi \underset{\text{mass}}{} \left[\left[\varepsilon_0\mu_0 \right]_{\text{ElectroMagnetic}}^{\text{EM Field}} . \left[mAv^2 \right]_{\text{mass velocity}}^{\text{Planck quanta}} \right] . v$$

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

$$p = T\pi \left[\left[mAv \right]_{\text{momenta}}^{\text{Energy}} \right]$$

Charged Forces

Coulombs

$$1\text{C} = 1\text{A} \cdot 1\text{s}$$

As

Charles-Augustin de Coulomb

(14 September 1736 – 23 August 1806)

Amperes

$$1\,\text{A} = 1\frac{\text{C}}{\text{s}}$$

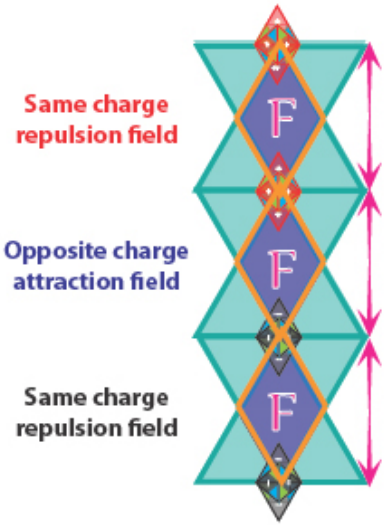
$\frac{C}{s}$

Andre Ampere

(20 January 1775 – 10 June 1836)

Linear Electric Force between Charged particles in motion

$$F = k\frac{Q_1 Q_2}{r^2}$$



$$F_{elec} \propto \frac{Q_1 Q_2}{r^2}$$

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

C

It is defined as the charge transported by a steady current of one ampere in one second.

Charge

$$E = F/q$$

Electrical Energy is defined as the Force per unit Charge

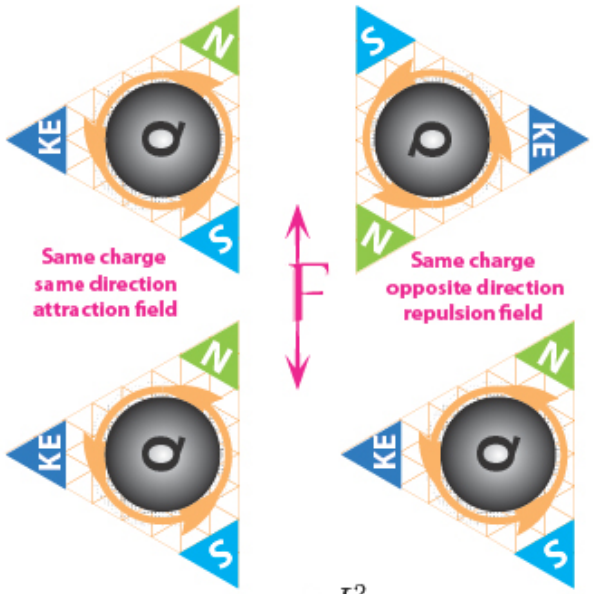
Current

The amount of electric charge passing a point per unit time

A

Sidereal Magnetic Force between Charged particles in motion

$$F = 2k_A\frac{I_1 I_2}{r^2}$$



$$F_m = \frac{\mu_0 I^2}{2\pi r}.$$

Measuring Charge

Planck quanta

+ N

$[[mAv^2]]$

mass velocity

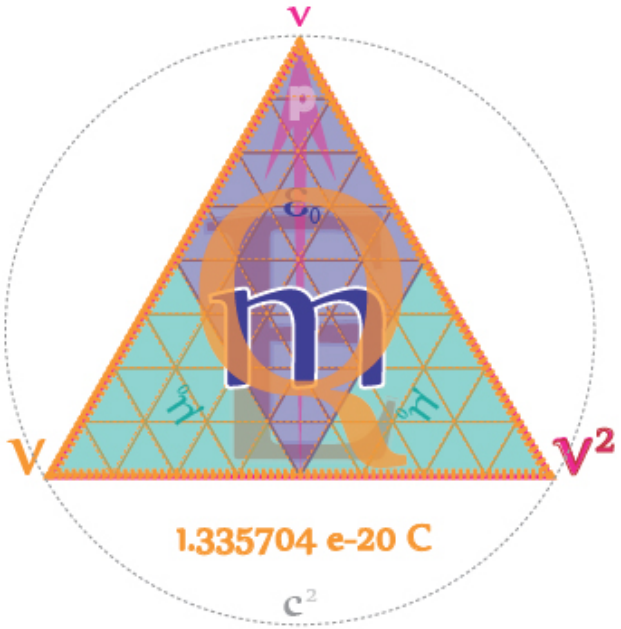
-
S

QAM provides the means
for Energy differentiation

ENERGY

$mv^2 = E = hv^2$

mass velocity planck quanta



EM Energy Field

All classical definitions of Charge can be redefined as in terms of Quantum Energy Momenta

Quantum
Angular Momentum

Coulombs

$1C = 1A \cdot 1s$

It is defined as the charge transported by a steady current of one ampere in one second.

C

An elementary charge is
1.602845472 e-19 C

Coulomb per kg

1.81082 e-11 $\frac{C}{kg}$

seconds per mass

$\frac{QAM}{[mv^2]}$

mass velocity

QAM/Energy

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

$\frac{s}{kg}$

QAM/EM field

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

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

s
seconds

The measurement of the ratio of mass to charge is the basis for mass spectroscopy

planck quanta

$\frac{[hv^2]}{QAM}$

Energy/QAM

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

$\frac{kg}{s}$

Amperes

$1\,A = 1\frac{C}{s}$

The amount of electric charge passing a point per unit time

A

6.238904 e18 electrons passing a given point each second constitutes one ampere.

kg per Coulomb

5.522357 e-12 $\frac{kg}{C}$

mass per second

Kinetic Energy

is the Electric field energy of Matter in motion

Kinetic Energy is the c^2 electric field extending from Matter [Tetrahedral geometries] as a result of its motion, it follows Tetryonic 'Golden Triangle' geometry and is 'proportional to an object's Material mass and its velocity

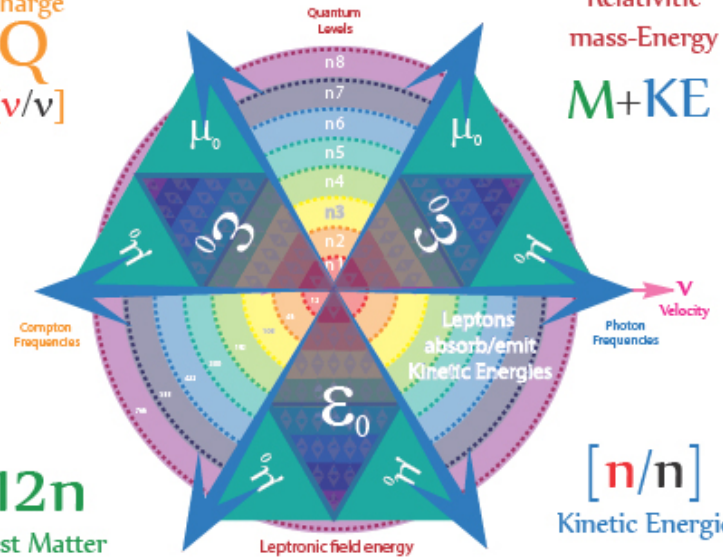
$$1/2\left[4n\pi\left[\left[\varepsilon_0\mu_0\right].\left[mAv^2\right]\right]\right]$$

4nπ: Matter; $\varepsilon_0\mu_0$: ElectroMagnetic (EM Field); mAv^2: mass, velocity (Planck quanta)

Charge

Q

[ν/ν]



Relativitic mass-Energy

M+KE

12n

Rest Matter

[n/n]

Kinetic Energies

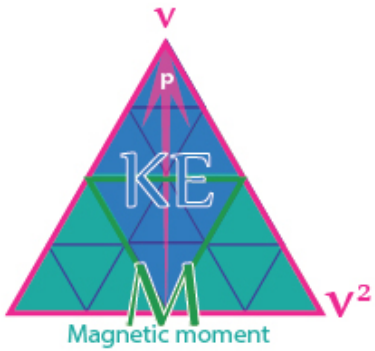
Kinetic Energy is 1/2 of the secondary KEM field created when Matter moves through space

$$1/2\left[\frac{\left[mAv^2\right]}{c^2}\right]$$

mAv^2: mass, velocity (Planck quanta); c^2: EM Field

and is shown to be subject to Lorentz corrections

Kinetic Energy
creates
Magnetic Moments



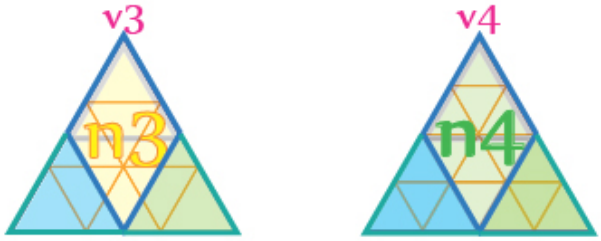
Magnetic moment

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

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

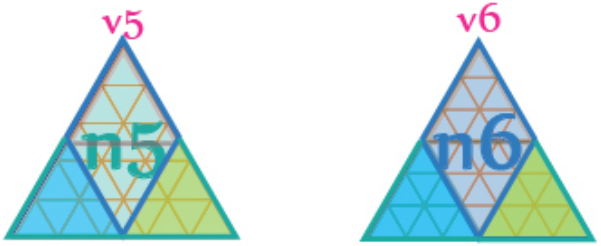
Kinetic energy is a scalar quantity; it does not have a direction.



Kinetic Energy is subject to Lorentz corrections

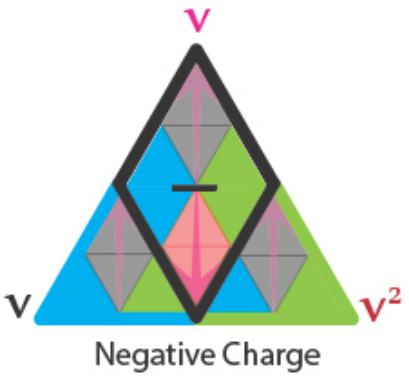
$$E_k = mc^2 - m_0c^2.$$

rest Matter is not

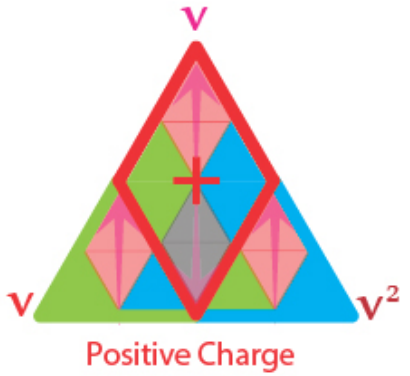


Kinetic Energy and Magnetic moments

Often noted as being two distinct EM energies
Kinetic Energy and Magnetic moments
are shown to be related aspects of
the same field in Free Space



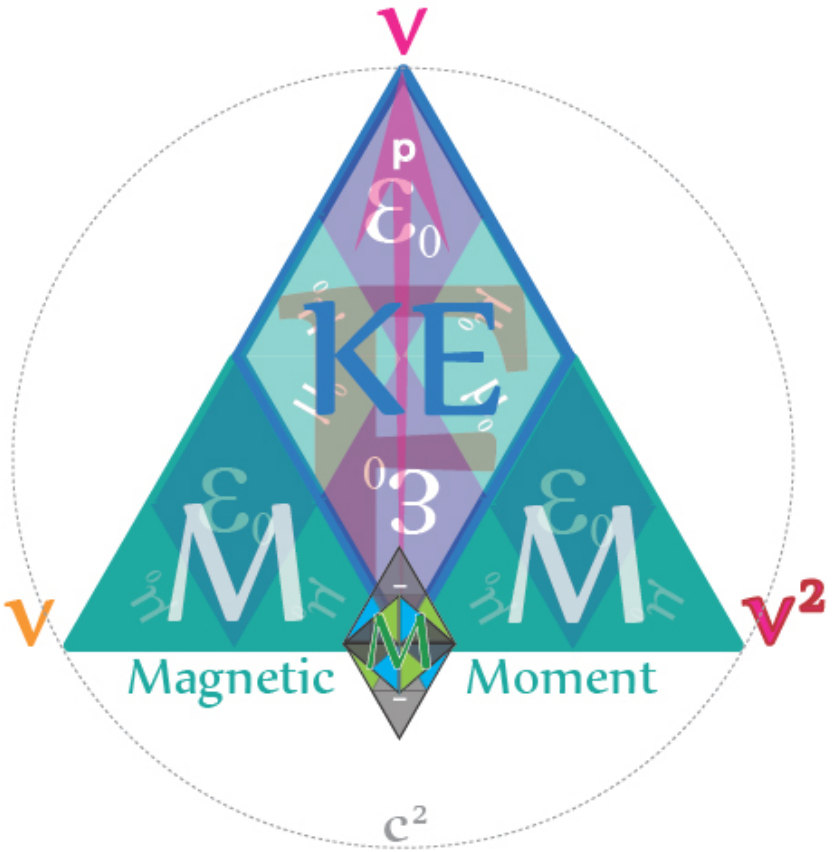
Negative Charge



Positive Charge

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

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



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

As opposed to Charged fields Kinetic EM fields have neutral Electric Fields

Types of Momentum

There are 3 types of Momentum

A
Quantised Angular Momentum
[m^2/s]

The Quantised 'Angular Momentum' of each Planck element's Moment of Inertia, giving rise to the 2 Quantum Charges

$L = I\omega$

h
[$kg \cdot m^2/s$]
or joule seconds.

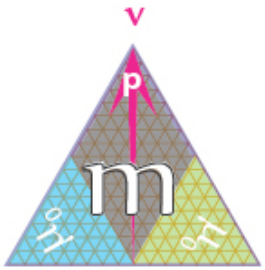
$A = .0012\ m^2/s$

mA

$L = I\omega$

p
Linear Momentum
[kg·m/s]

The square root (c) of each quantum Planck energy element geometry (c^2) when unbound from matter gives rise to nett Linear Momentum

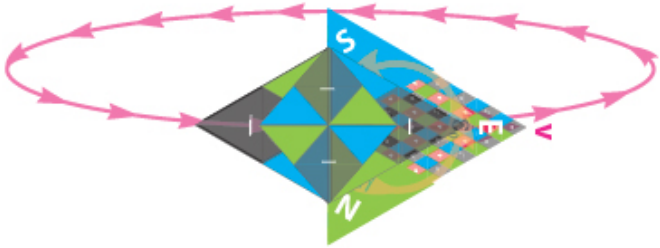


$$p = T\pi\left[\left[\underset{\text{mass}}{m}\underset{\text{Planck quanta}}{A}\underset{\text{velocity}}{v}\right]\right] = mv$$

ℓ
Quantum Angular Momentum
. . . [n-1] [n] [n+1] . . .

The orbital angular momentum of electrons in atoms associated with a given quantum state

$$L^2 = L_x^2 + L_y^2 + L_z^2$$

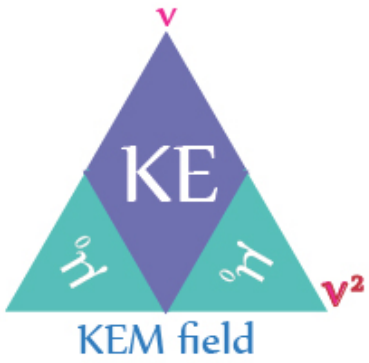


$$\omega = \frac{2\pi}{T} = 2\pi f$$

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.

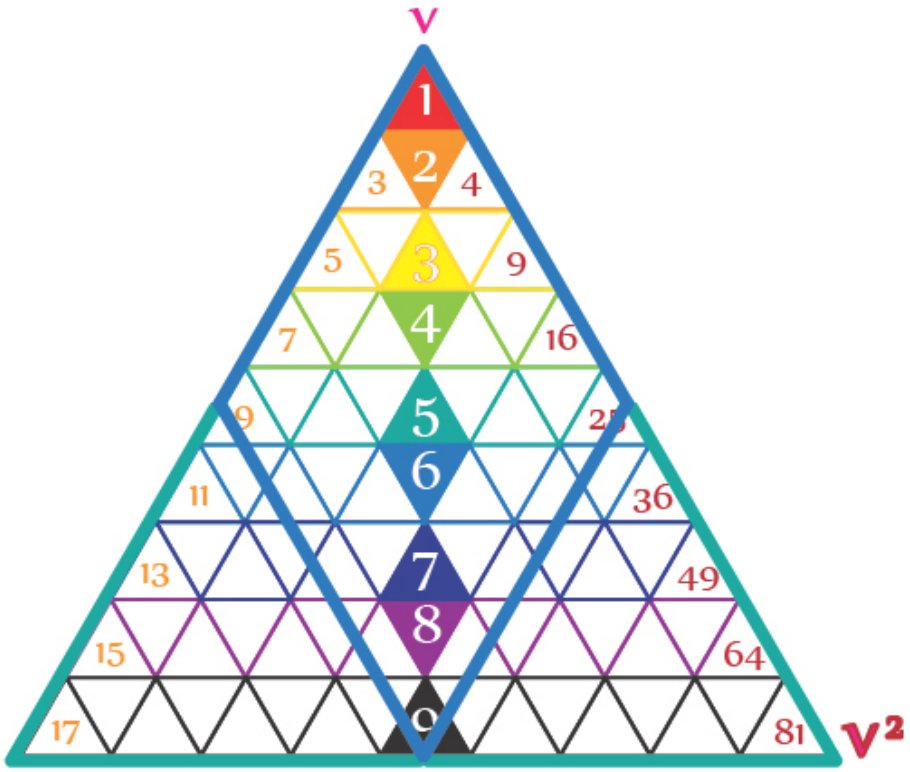
$$KE = \frac{1}{2}Mv^2$$



KEM field

$$p = Mv$$

Energy momenta



$$E = Mv^2$$

In classical geometric terms, the square root maps the area of a square to its side length.

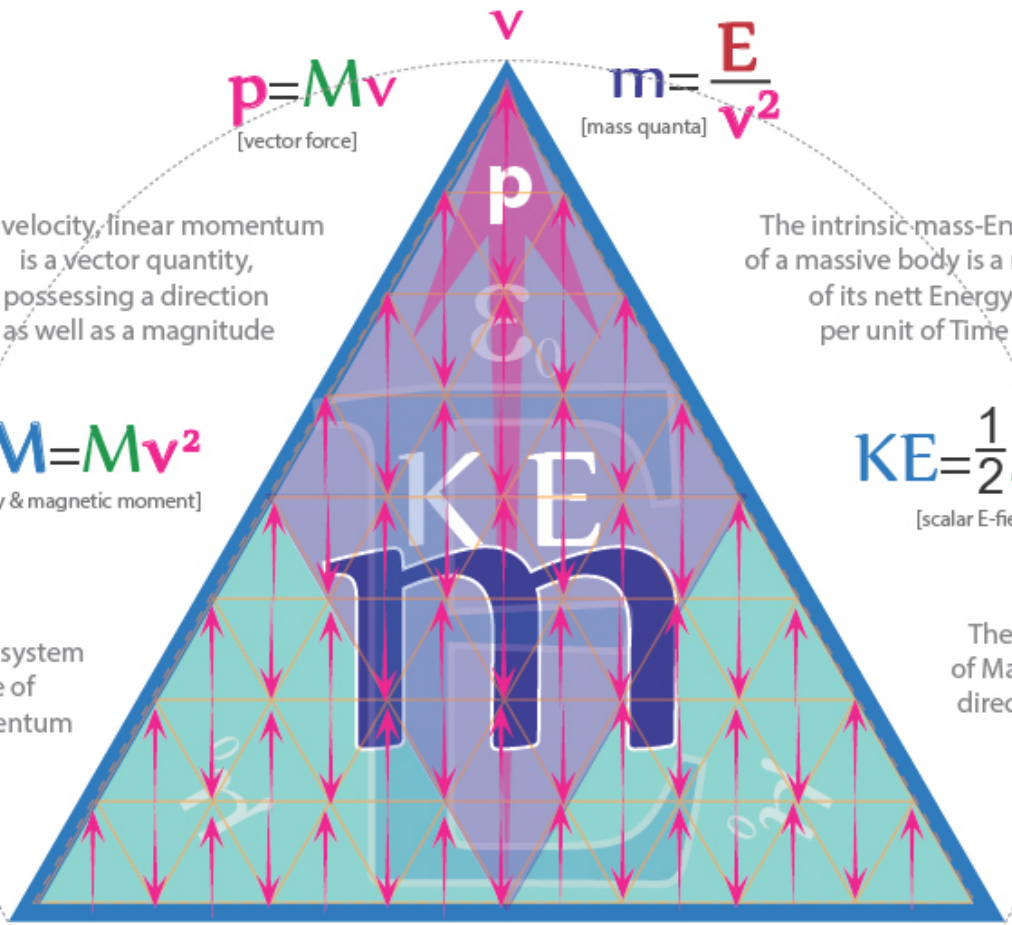
$$p^2 = E$$

$$p = \sqrt{E}$$

In Tetryonic geometry, the square root maps the momenta [mv] of an EM field to its ENERGY

Electric fields have a differing geometric relationship to ENERGY compared to momenta

mass-Energy-momenta



$p=Mv$

[vector force]

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

[mass quanta]

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]

$E=p^2$

[Energy momenta]

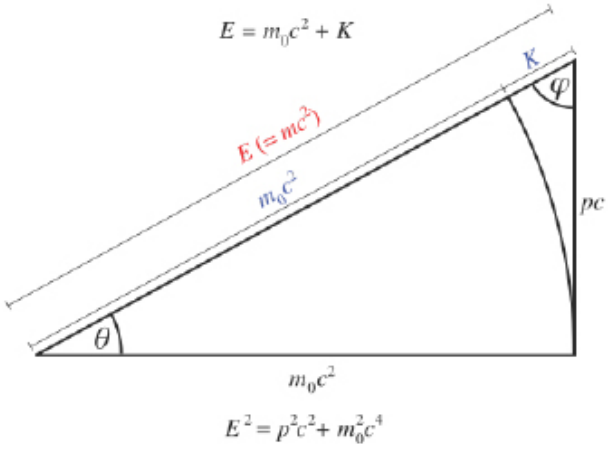
Planck quanta

$[mAv]$

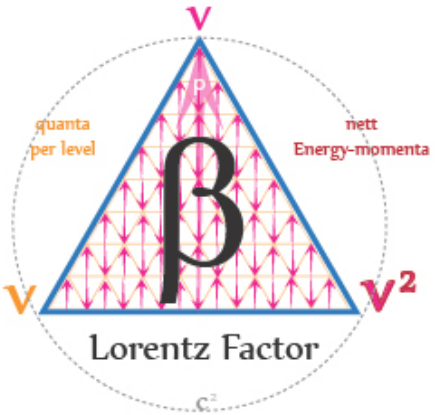
mass velocity

$F=ma$

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



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

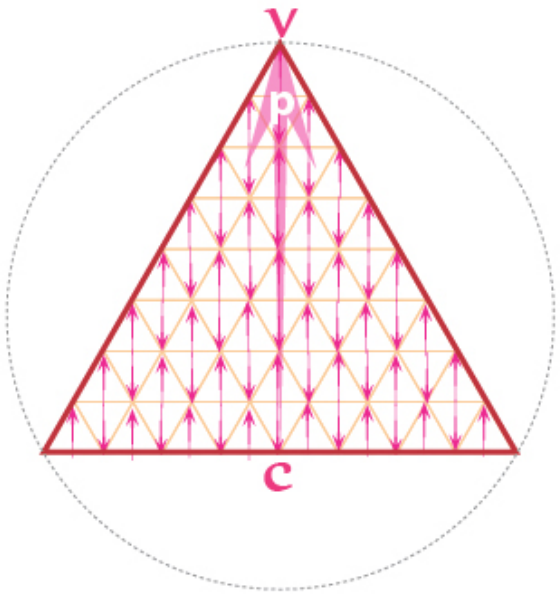
E^2 is the Energy content of a superpositioned EM field

Lorentz Factor

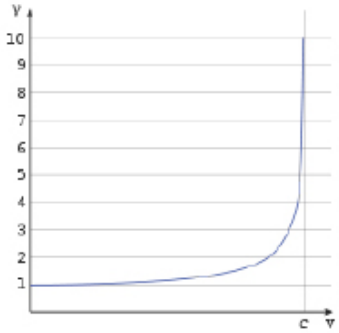
The Lorentz factor or Lorentz term is an expression which appears in several equations in special relativity. It arises from deriving the Lorentz transformations. The name originates from its earlier appearance in Lorentzian electrodynamics - named after the Dutch physicist Hendrik Lorentz.

Wavelength, momentum

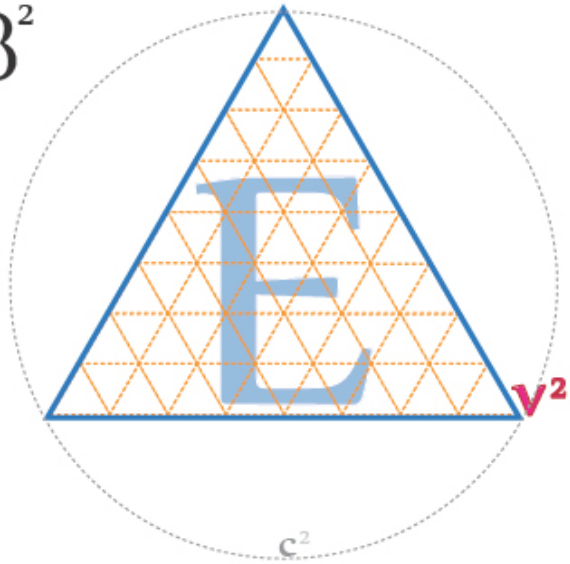
mass-ENERGY



$$\beta = \left[\frac{v}{c}\right] \qquad \left[\frac{v^2}{c^2}\right] = \beta^2$$

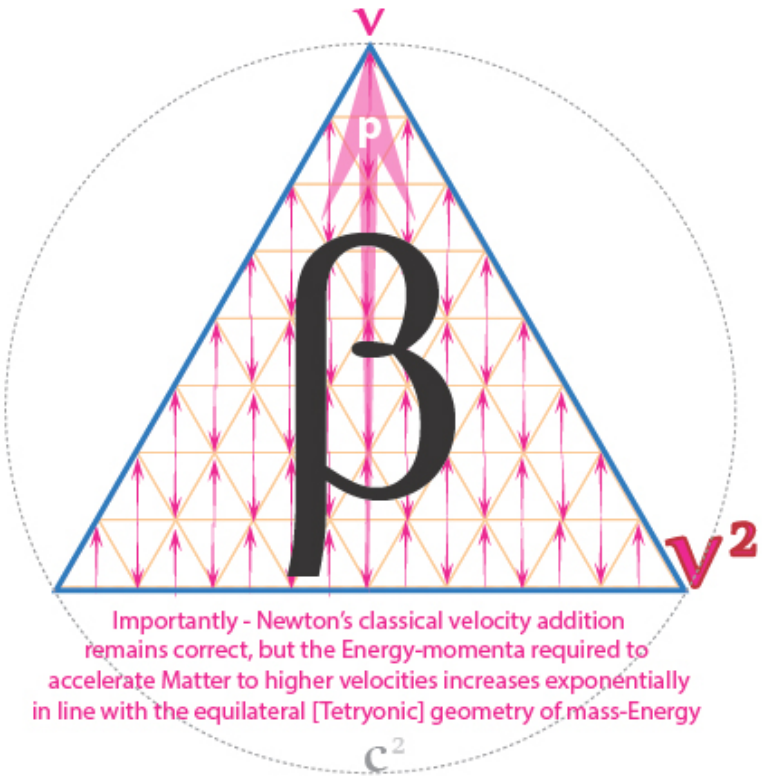


Classically modelled as an infinite series approaching c
Tetryonics reveals it to be a geometric property
of Equilateral Energy-momenta



A vector measure of the Energy content of a waveform

$$\gamma \equiv \frac{c}{\sqrt{c^2 - v^2}} = \frac{1}{\sqrt{1 - \beta^2}} = \frac{\mathrm{d}t}{\mathrm{d}\tau}$$



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-Energy

A scalar measure of a KEM waveform's energies

$$\gamma = 1/\sqrt{1 - v^2/c^2}$$

γ

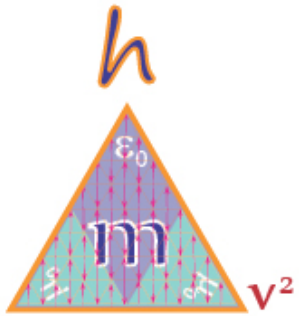
Γ

Work - Force - Energy

Work is the result of Energy-momentum transfer (by means other than Matter-transfer),
and produces changes in the second system' s nett Energy-momenta

Work

refers to an activity involving a force
and movement in the directon of the force



$$W = F.d = ma.d = E$$

The Planck constant is the quantum of Action

$$kg\,\frac{m^2}{s}\;\frac{1}{s}$$

Mechanical work is a scalar quantity that can be described
as the product of a force times the distance through which it acts

[Energy-momenta quanta per second]

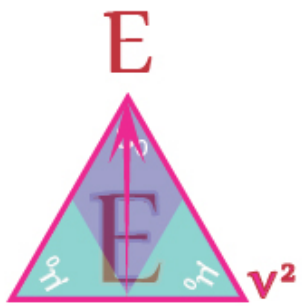
Force $ma = \frac{dp}{dt} = d\left[\frac{mv}{t}\right]$ $kg\,\frac{m}{s^2}$

Momentum is the quantum of Force

Power is defines as the rate of
using Energy or the rate of doing work

Energy

is the capacity for doing work.
You must have energy to accomplish work



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

Energy is the square of Momentum

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

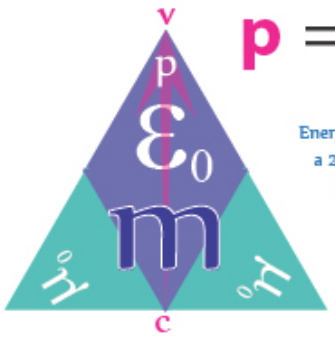
Energy is always equivalent to the ability to exert pulls or pushes
against the basic forces of nature, along a path of a certain length.

[mass- Energy-momenta quanta per second]

mass-ENERGY momentum - Matter

mass

$$p = m\left[\frac{v}{c}\right]$$



Energy momenta in a 2D equilateral geometry

Radiant waveform
EM ENERGY

$$E=p^2$$

$$E = p\frac{v}{c} = m\frac{v}{c}.\frac{v}{c} = m\frac{v^2}{c^2}$$

ENERGY momenta [vector transforms]

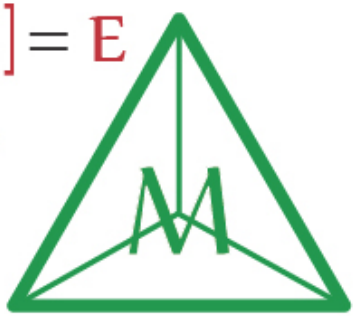
mass-ENERGY [scalar transforms]

$$E=p\beta \qquad E=m\beta^2$$

Matter

$$4\pi m\left[\frac{v^2}{c^2}\right] = E$$

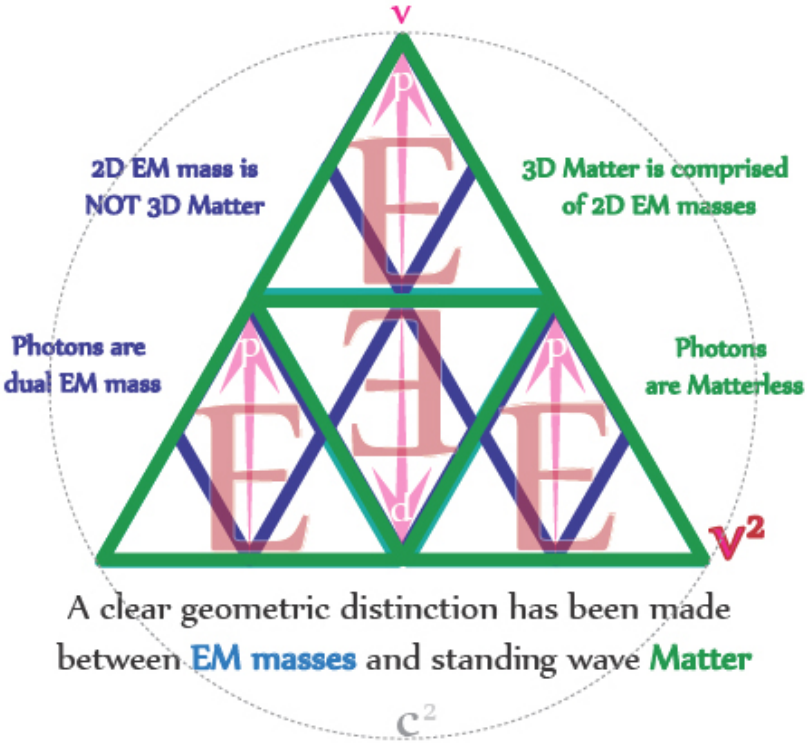
Four Energy momenta in a 3D tetrahedral geoemtry



Standing waveform
EM ENERGY

$$n\pi\left[\left[\varepsilon_0\mu_0\right].\left[mAv^2\right]\right]$$

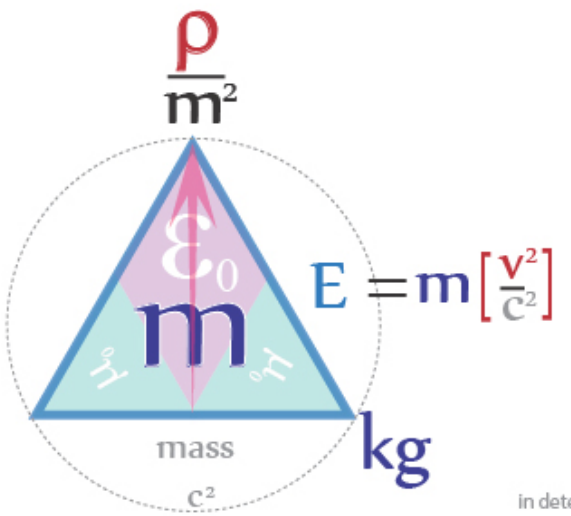
EM Field (ε0μ0) · Planck quanta (mAv²)
mass · ElectroMagnetic · mass · velocity

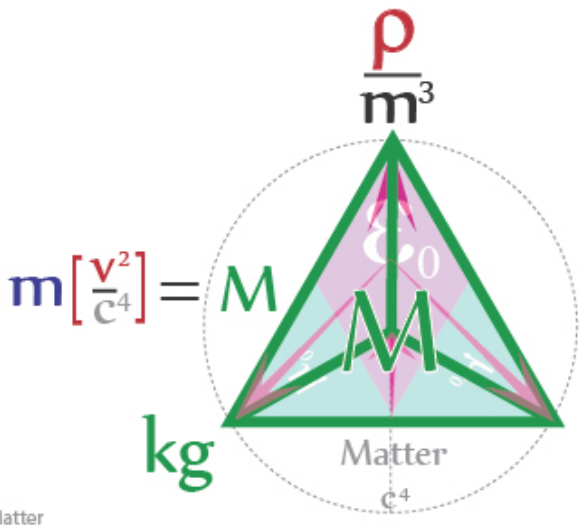


A clear geometric distinction has been made between **EM masses** and standing wave **Matter**

$$T\pi\left[\left[\varepsilon_0\mu_0\right].\left[mAv^2\right]\right]$$

Matter · EM Field (ε0μ0) · Planck quanta (mAv²)
ElectroMagnetic · mass · velocity





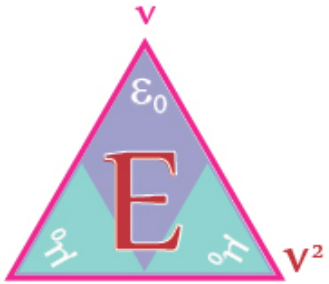
massless particles are a scientific misnomer
and massless must now be re-termed Matterless

The widely used relativistic formula E2=m2c4+p2c2 is simply inappropriate for generalised use in determining mass-ENERGY momenta relationships due to its ambiguity with respect to the definition of mass-Matter

Unified Energy momenta geometry

$$E = n\pi\left[\left[mAv^2\right]\right]$$

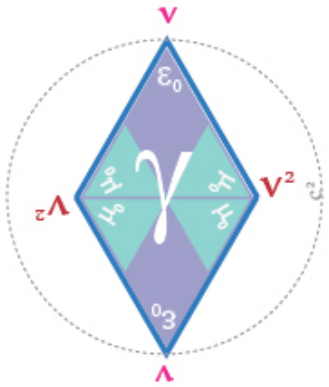
Planck quanta; mass; velocity



Energy

$$\beta = \left[\frac{v}{c}\right]$$

Lorentz
Linear factor



Photons

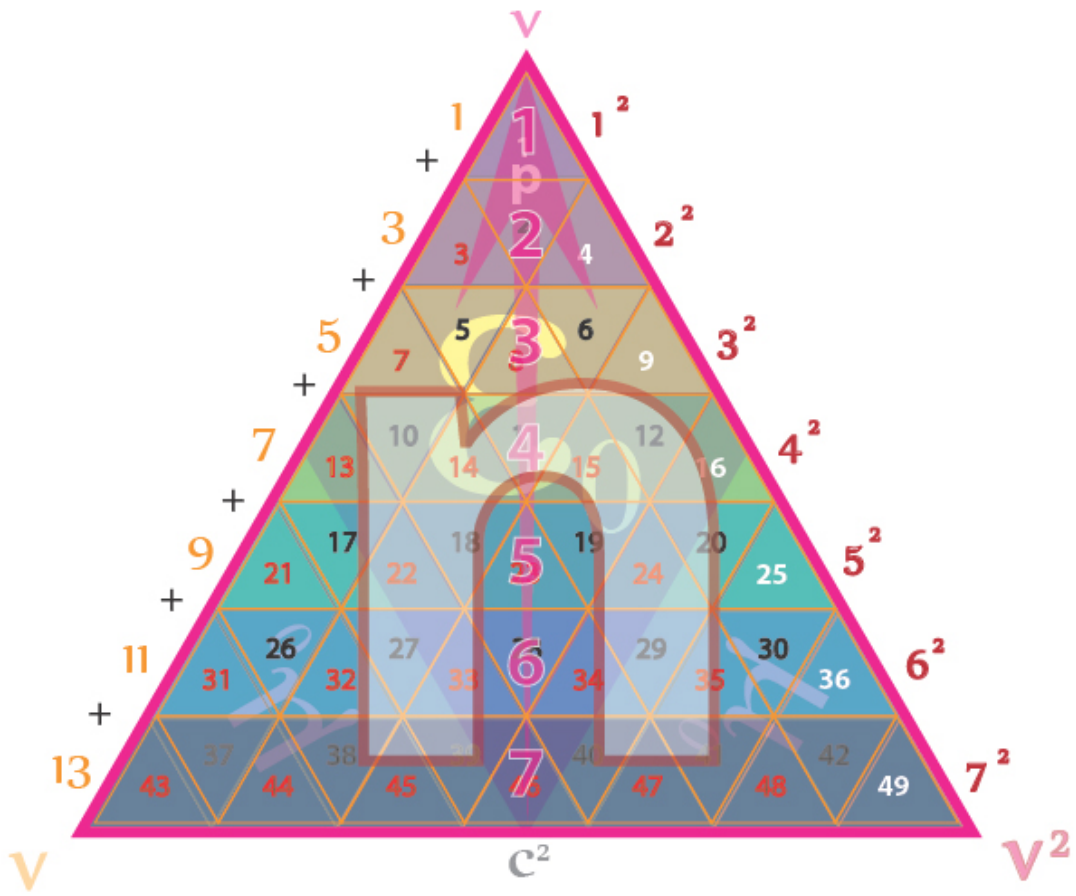
$$E_\gamma = 2\pi_{\text{Photons}}\left[\left[\varepsilon_0\mu_0\right].\left[mAv^2\right]\right]$$

EM Field; Planck quanta; ElectroMagnetic; mass; velocity

momentum

$$p = T\pi\left[\left[mAv\right]\right]$$

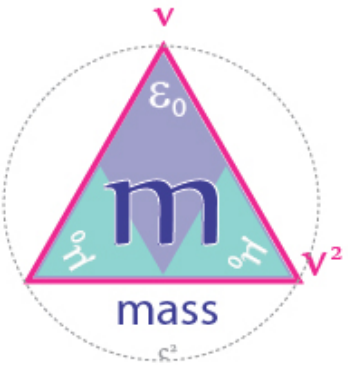
Energy; momenta



Tetryonic's equilateral geometries model
EM mass-ENERGY momentum
in all its forms

$$m = n\pi_{\text{mass}}\left[\left[\varepsilon_0\mu_0\right].\left[mAv^2\right]\right]$$

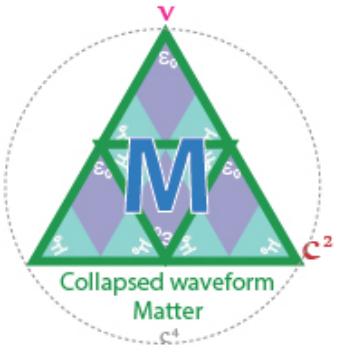
EM Field; Planck quanta; ElectroMagnetic; mass; velocity



mass

$$\beta^2 = \left[\frac{v^2}{c^2}\right]$$

Lorentz
Scalar factor

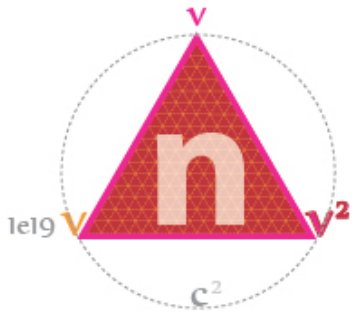


Collapsed waveform
Matter

$$M = 4n\pi_{\text{Matter}}\left[\left[\varepsilon_0\mu_0\right].\left[mAv^2\right]\right]$$

EM Field; Planck quanta; ElectroMagnetic; mass; velocity

Square Energy distributions



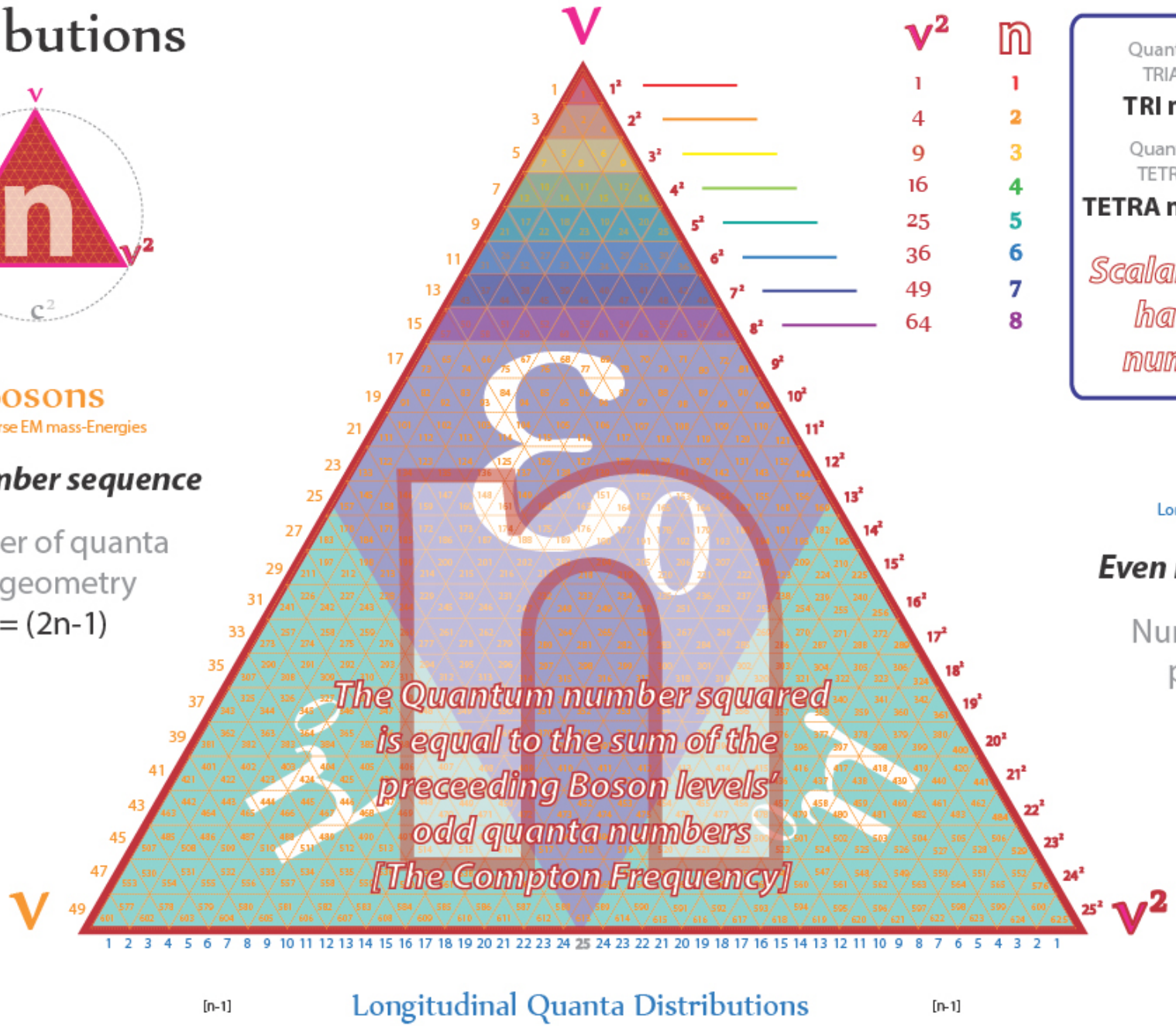
Bosons

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 SQUARE number quanta

Photons

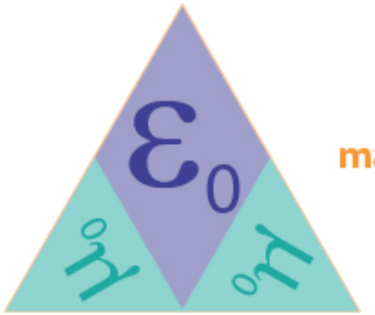
Longitudinal EM mass-Energies

Even number sequence

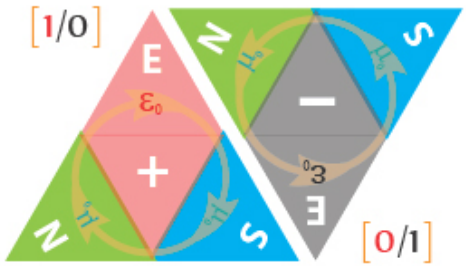
Number of quanta per geometry

n = (2n)

Tetryonic Energy and Charge relationships

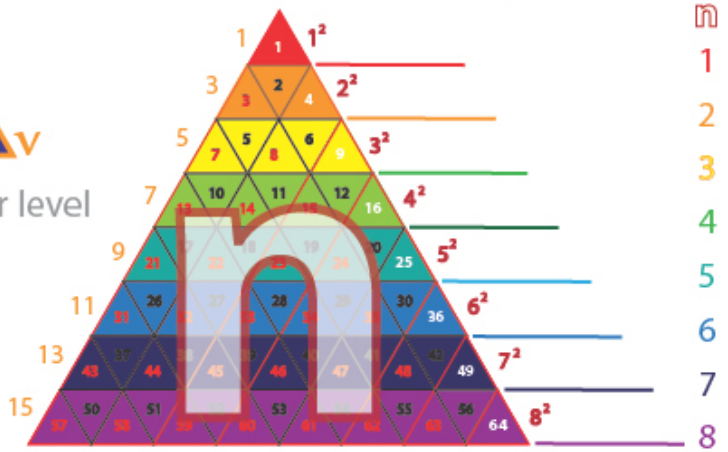


Charge is the source of all mass-Energy-Matter geometries



quanta per level

Quantum Levels
(follow Square rule)



Energy density determines particle mass

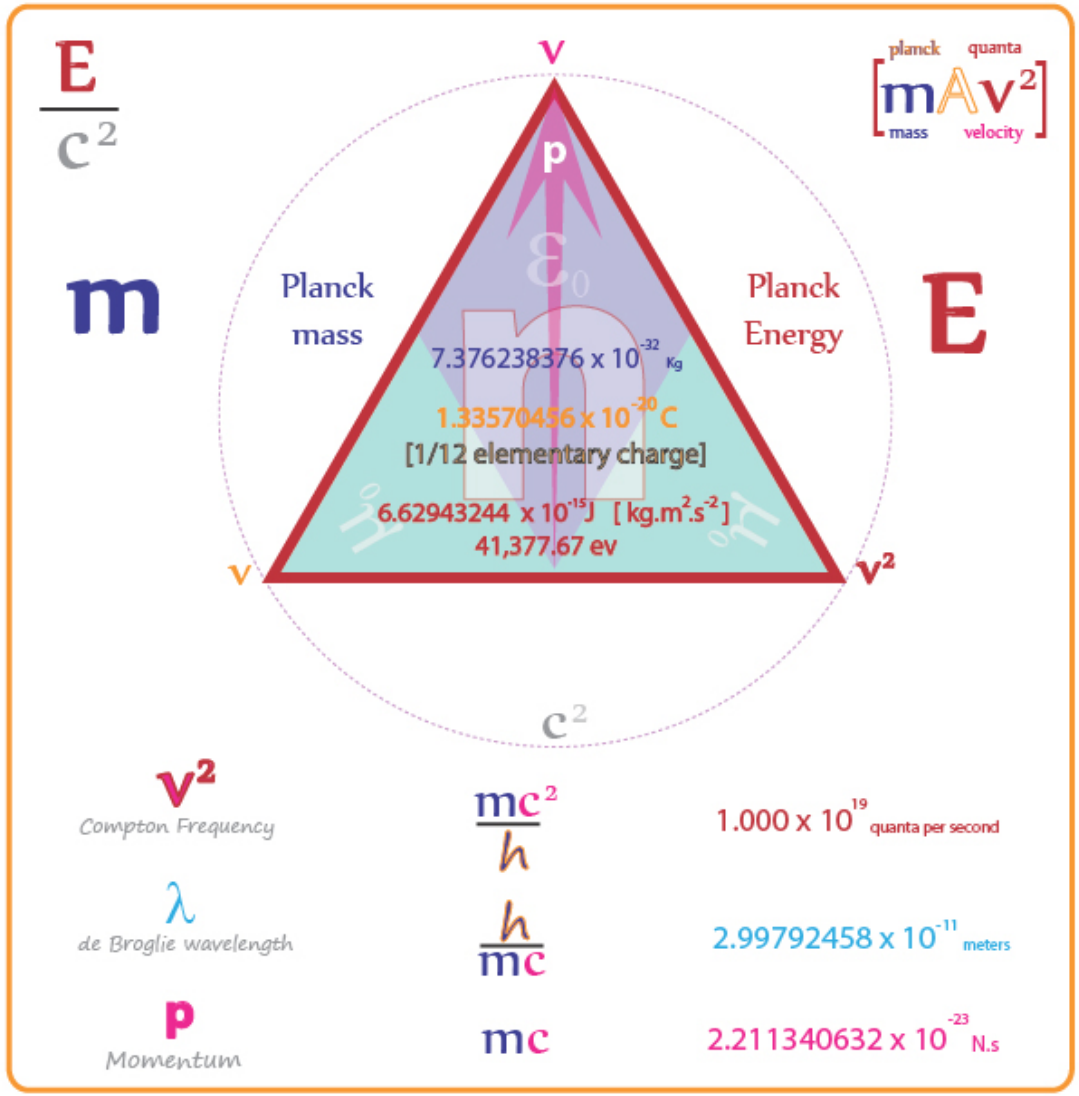
Total Charge and Energy determines particle characteristics
(Type, Family, generation, mass etc)

		Charge	Energy
12 [0/12]  1.2e20	Electron	−12	1.2e20
		T 	T m v²
12 [24/12]  2.25e23	Proton	+12	2.25e23
		Same charge (opposite polarity)	1875x (differential)

[v/v]

Planck mass-Energy

Planck mass-Energy



ν^2 *Compton Frequency*	$\frac{mc^2}{h}$	1.000×10^{19} quanta per second
λ *de Broglie wavelength*	$\frac{h}{mc}$	$2.99792458 \times 10^{-11}$ meters
p *Momentum*	mc	$2.211340632 \times 10^{-23}$ N.s

[Planck Energy]	$mv^2 = E = hv^2$	E - Energy quantum
[Planck mass]	$\frac{mv^2}{c^2}$	m - mass quantum
[Planck Charge]	$\frac{\text{elemental charge}}{12}$	ν - quanta of Charge

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

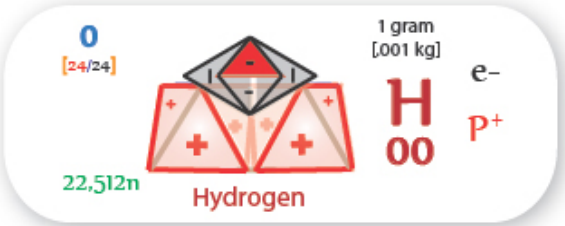
Tm [Carbon] - 270,072 12 22,506

If we calculated for the molar mass of C12 in 12 grams we would get

(.012/NA/270072) $7.378204848 \times 10^{-32}$ Kg/mol

this is in error by 1/2 of the mass of an electron

Tetryonic mass [Hydrogen] - 2.25512 e23



Using Tetryonic geometry we can solve for an exact value of a n-level 'Planck mass' and exactly account for Quantum energy contributions in the Electrons and Baryons in any Element thus determining exact masses and avoiding 'weighted' masses

In turn this sets N[Hydrogen -Rest Mass] as 1gram exactly and defines Avagadro's number as the inverse of this number

$$\text{Molar mass} = \frac{H_1 \text{ Atomic mass}}{\text{Avagadro's No.}}$$

$$\text{mass } H_{mol}/Av = \frac{.001}{6.02214179 \times 10^{23}}$$

$$= 1.660738412 \times 10^{-27} \text{ g/mol}$$

$$H_{mole}/m[H] = \frac{1.660738412 \times 10^{-27}}{22,512}$$

Planck mass = $7.376238376 \times 10^{-32}$ Kg

This is an exact Atomic rest mass as opposed to the current average weighted Atomic mass [which is incorrect by 1/2 the mass of an electron]

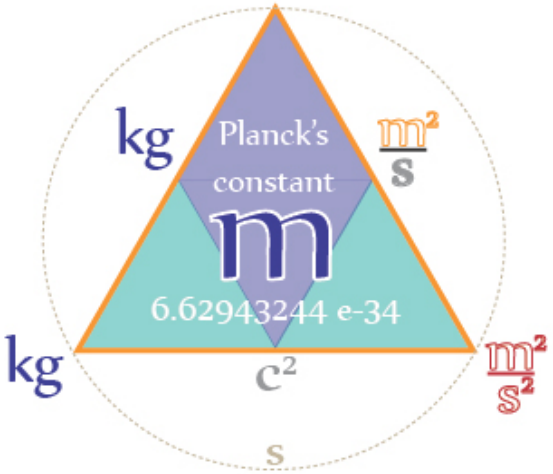
Charge
the inverse of mass

Planck mass

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

7.376238376 e-51 kg

Ignoring the external Energy geometry & inverting we get



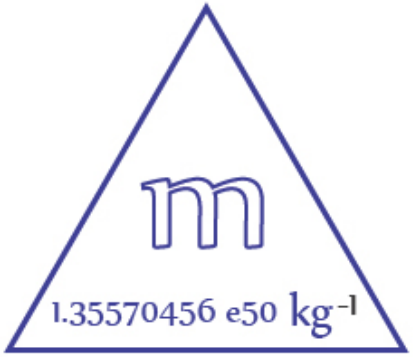
Planck Energy

$$hv$$

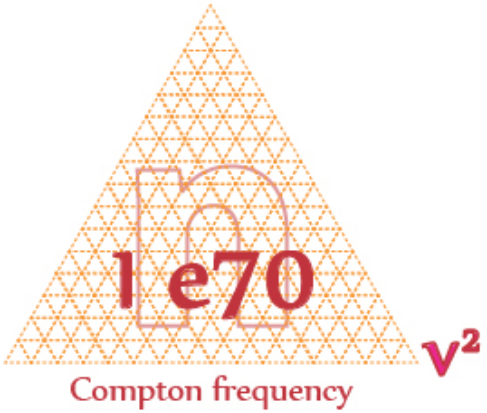
6.62943244 e-34 kg $\frac{m^2}{s^2}$

Multiplying by T12 [electron geometry] we get the elemental charge

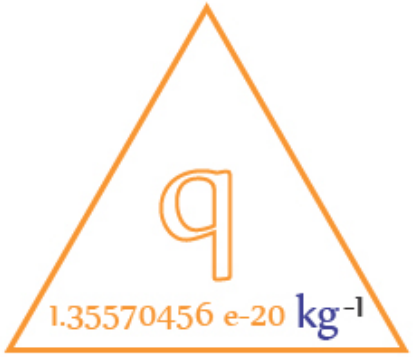
1.602845472 e-19



Inverse Planck mass



This suggests that Planck's constant is not the 'miminal quantum of Action' [it is a n-level scaled constant (6.6264e-104)]



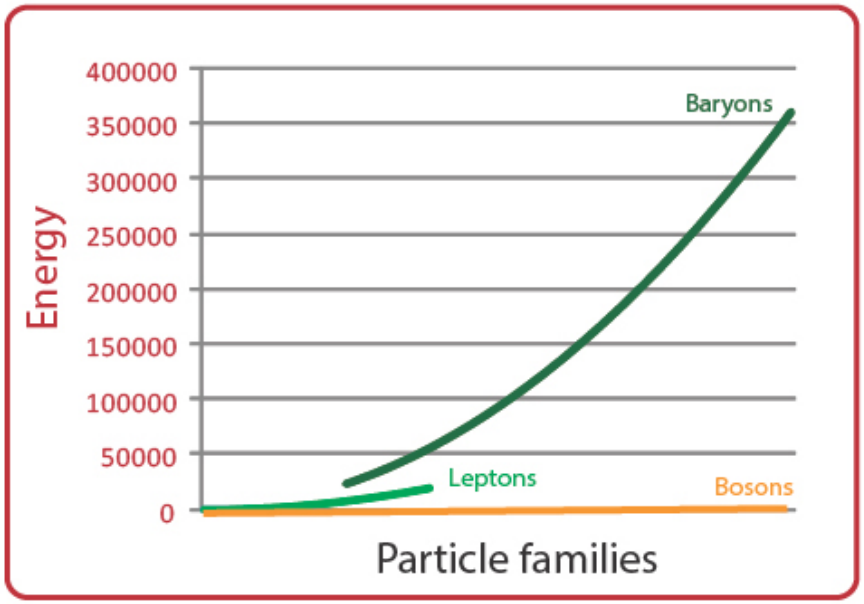
quantum Charge

A kg

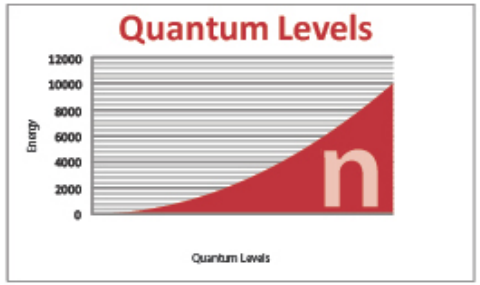
The discovery of the relationship between inverse Planck mass and charge agrees with an earlier determination that Current & Coulomb's Constant can be redinfined as a measurement of mass-seconds & mass/second respectively [thus reinforcing Charge's role in the geometry of mass-Energy-Matter]

$\frac{kg}{s}$ C

Nuclear Energy levels

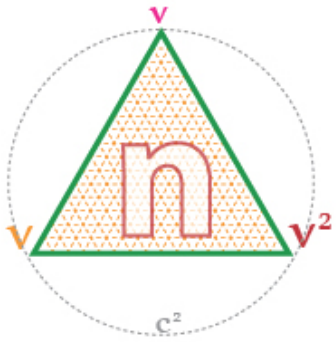


Exponential energy levels



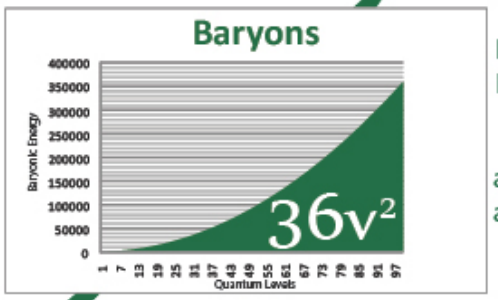
$$T\pi\left[\left[mAn\right]\right]$$

Energy
mass QAM quanta



$$1e19v = \eta = 5e18f$$

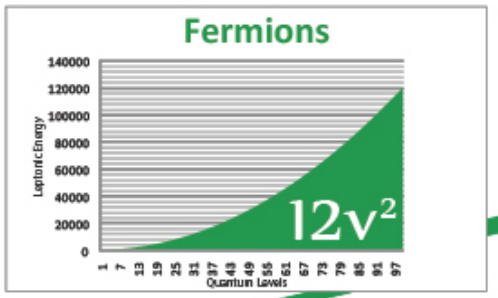
Absorption, Emission and Radioactive Decays follow exponential curves as they apply to the Tetryonic geometry within particle families



12 [24/12]
0 [18/18]
12 [12/24]

Proton
Neutron

antiNeutron
antiProton

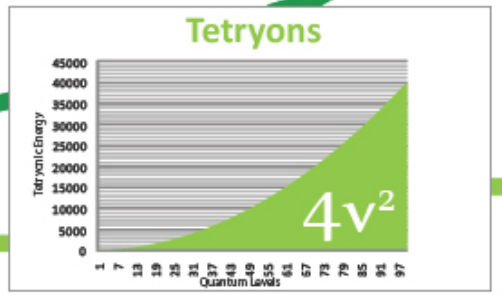


12 [12/0]
12 [0/12]
0 [6/6]
8 [10/2]
4 [4/8]

Electron
Positron

Neutrino

Up
Down
Strange
Charmed
Top
Bottom



4 [4/0]
0 [2/2]
4 [0/4]

Positive
Negative
Neutral

Bosons

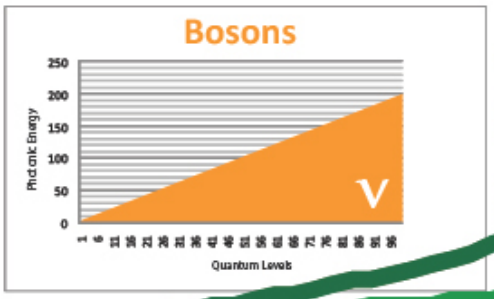
Emission and Absorption of Bosons and Photons within Atomic Nuclei

Increase and decrease in integer amounts according to the Tetryonic geometries of the particles involved

$$ODD\pi\left[\left[\varepsilon_0\mu_0\right].\left[mAv^2\right]\right]$$

Bosons
EM Field
Planck quanta
ElectroMagnetic mass velocity

Linear energy levels



1 [1/0]
0 [1/1]
1 [0/1]

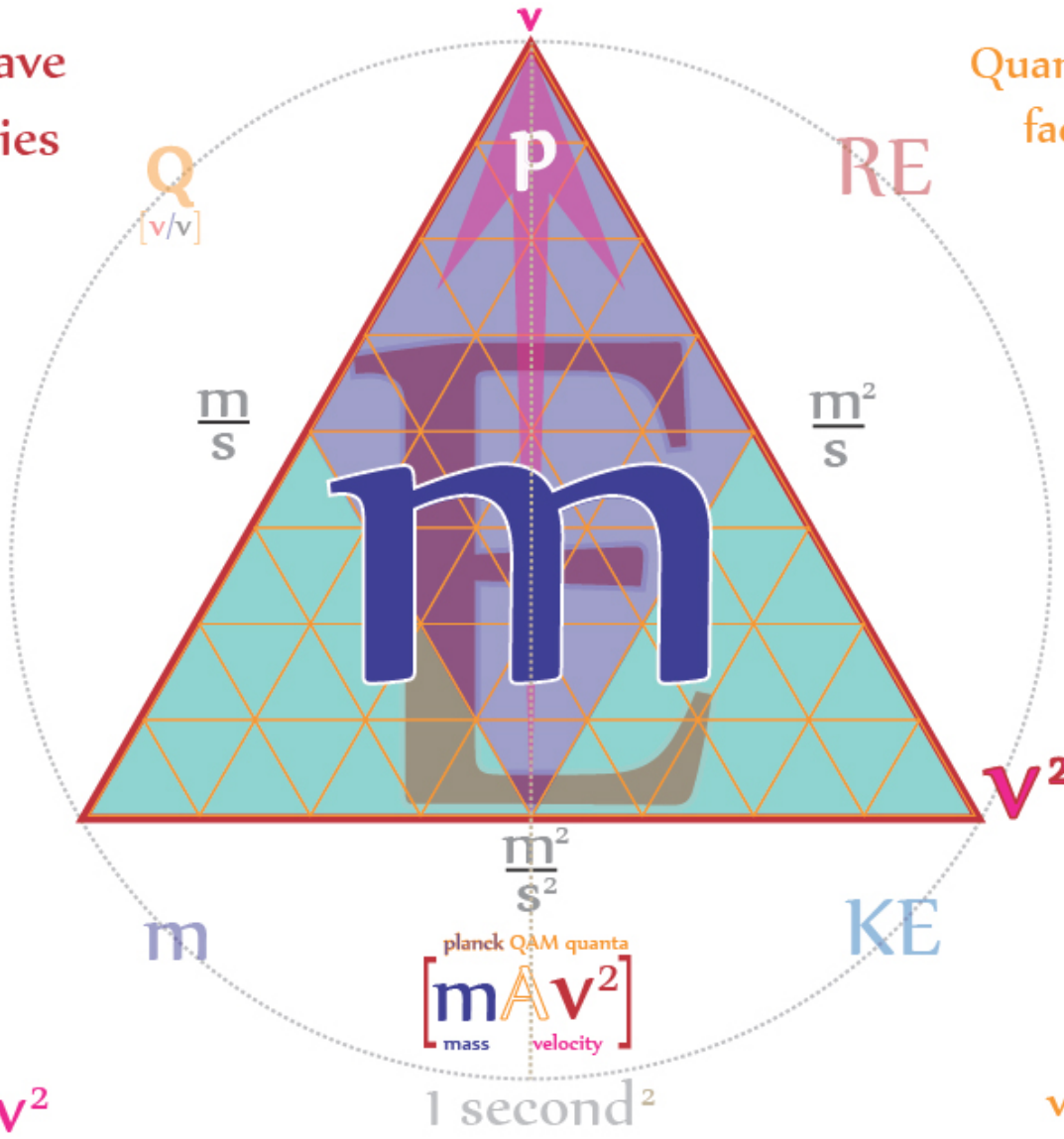
$$2\pi\left[\left[\varepsilon_0\mu_0\right].\left[mAv^2\right]\right]$$

Photons
EM Field
Planck quanta
ElectroMagnetic mass velocity

Energy geometry

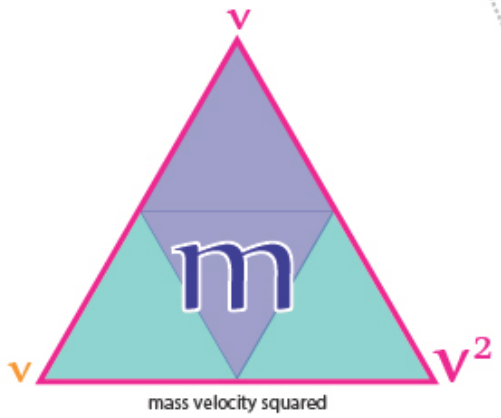
All mass-Energies have
Equilateral geometries

Quantised Angular Momentum
facilitates EM interactions



E
mass-Energy
$kg\frac{m^2}{s^2}$

h
Planck's Constant
$kg\frac{m^2}{s}$



mass velocity squared

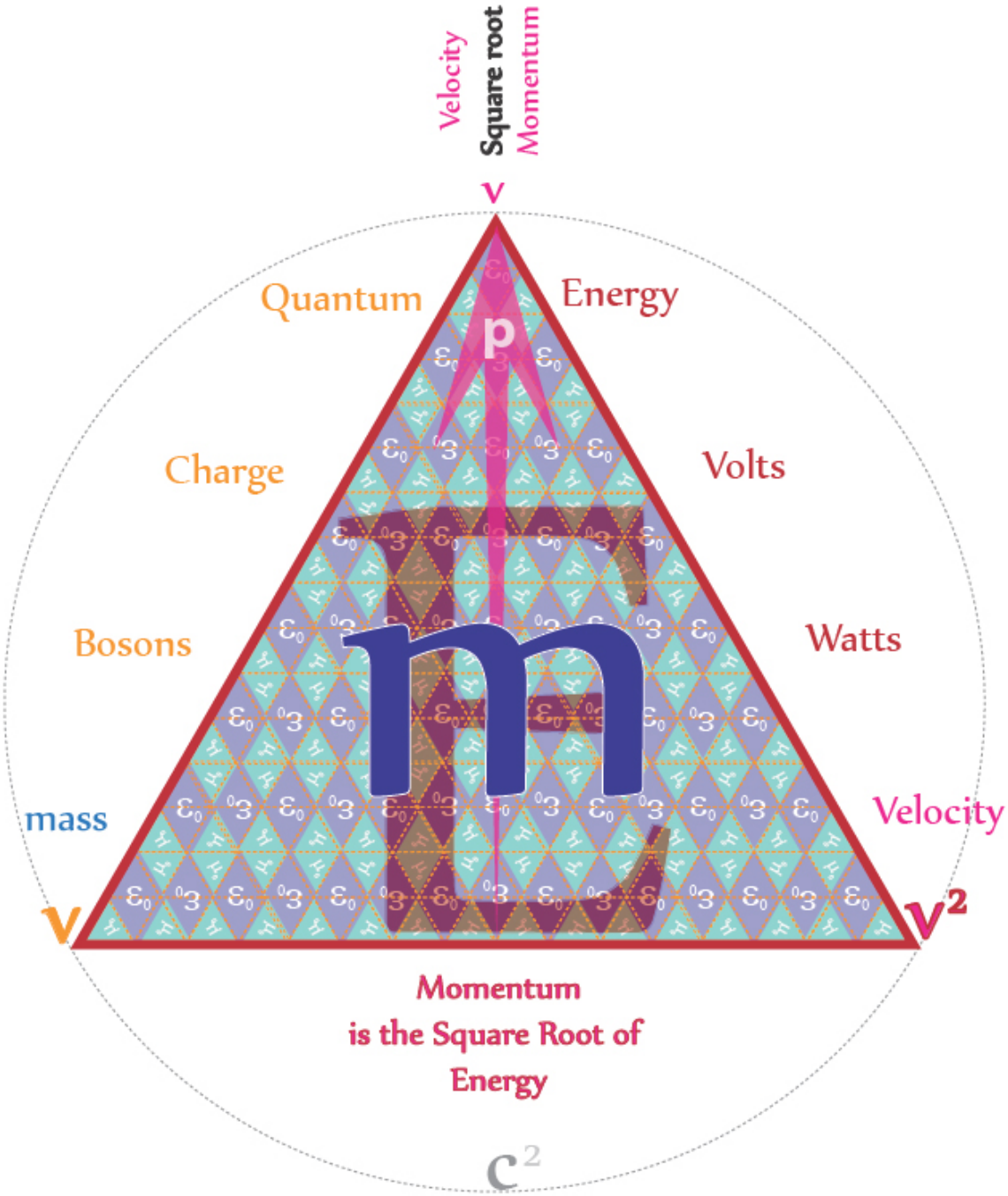
mass Angular Momenta per second

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

mass-Energy relationships

m
mass

E
Energy



Bosons are
Transverse
EM masses

Photons are
Longitudinal
EM masses

EM mass-Energy-Matter Equivalence

Bosons are Transverse masses

Planck mass

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

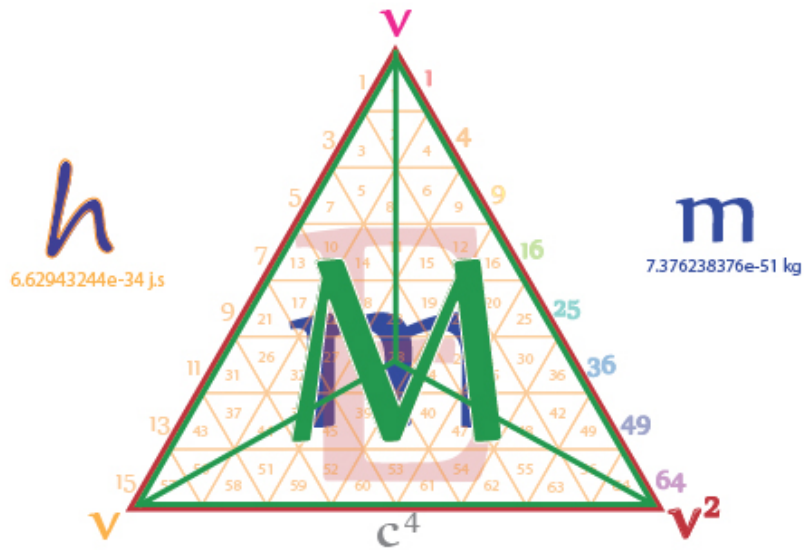
EM Field · Planck quanta · ElectroMagnetic · mass · velocity

Photons are Longitudinal masses

Photons

$$\text{EVEN Photons } \pi \left[\left[\varepsilon_0 \mu_0 \right] . \left[mAv^2 \right] \right]$$

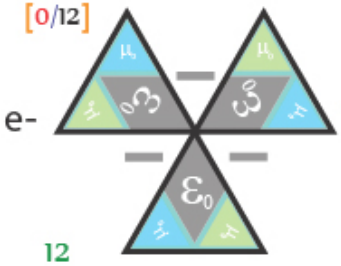
EM Field · Planck quanta · ElectroMagnetic · mass · velocity



LEPTONS

12

[0/12]

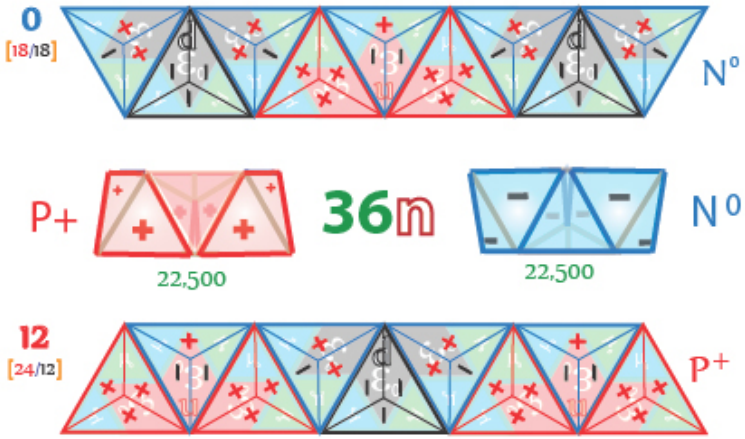


Tetryonic Matter of Electron - $8.851486051 \times 10^{-31}$ Kg

mass-Energy of Electron - $7.955318928 \times 10^{-14}$ Kg.m2.s-2

$$12\pi \text{ Fermions } \left[\left[\varepsilon_0 \mu_0 \right] . \left[mAv^2 \right] \right]$$

EM Field · Planck quanta · ElectroMagnetic · mass · velocity



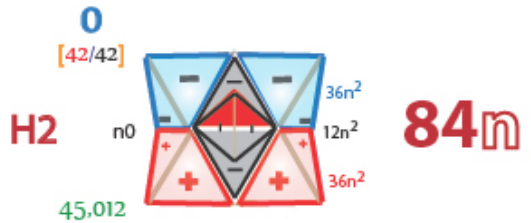
Tetryonic Matter of Proton - $1.659653635 \times 10^{-27}$ Kg

mass-Energy of Proton - $1.491622990 \times 10^{-10}$ Kg.m2.s-2

$$36\pi \text{ Baryons } \left[\left[\varepsilon_0 \mu_0 \right] . \left[mAv^2 \right] \right]$$

EM Field · Planck quanta · ElectroMagnetic · mass · velocity

ELEMENTS



Tetryonic Matter of Deuterium - $3.320192418 \times 10^{-27}$ Kg

mass-Energy of Deuterium - $2.984040130 \times 10^{-10}$ Kg.m2.s-2

$$84\pi \text{ Deuterons } \left[\left[\varepsilon_0 \mu_0 \right] . \left[mAv^2 \right] \right]$$

EM Field · Planck quanta · ElectroMagnetic · mass · velocity

EM mass quanta in Matter

kg n kg

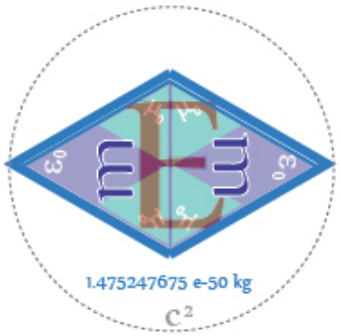
1 e19v

$$n\pi\left[\left[\varepsilon_0\mu_0\right].\left[mAv^2\right]\right]$$

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

mass

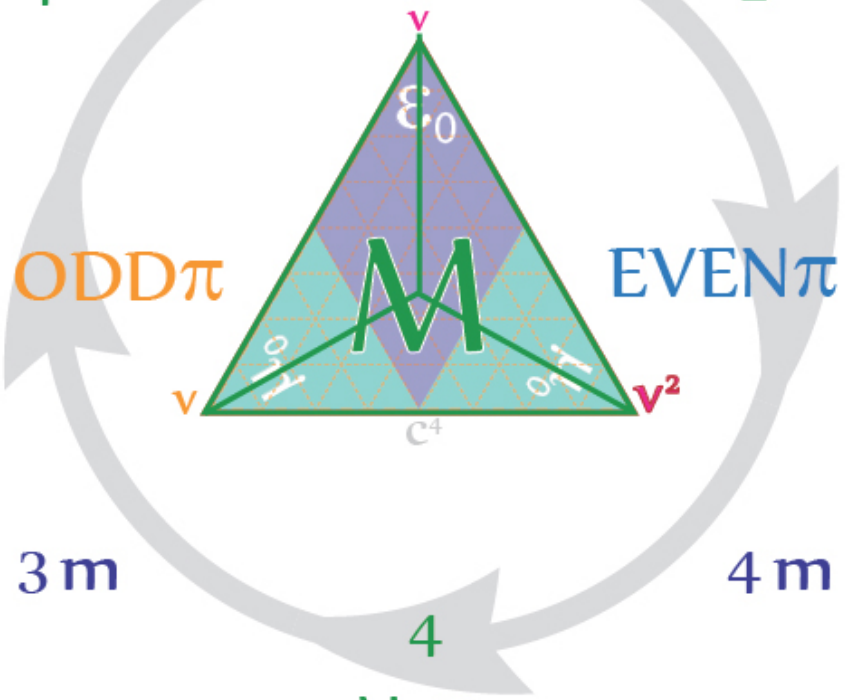
q



f

1

¼M ½M



ODDπ EVENπ

$$ODD\pi\left[\left[\varepsilon_0\mu_0\right].\left[mAv^2\right]\right]$$

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

$$EVEN\pi\left[\left[\varepsilon_0\mu_0\right].\left[mAv^2\right]\right]$$

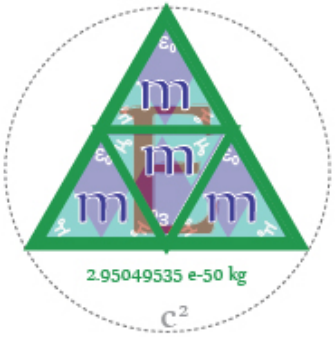
EM waves · EM Field · Planck quanta · ElectroMagnetic · mass · velocity

Q M

3 m 4 m

4

Matter



$$4n\pi\left[\left[\varepsilon_0\mu_0\right].\left[mAv^2\right]\right]$$

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

Lorentz Energy corrections

[are a direct result of the measurement of EM mass-Energy quanta in each c² geometry]

$$\beta = m\left[\frac{v}{c}\right]$$

[Energy-momentum corrections are linear]

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

[EM mass-Energy corrections are Scalar]

$$m \quad \frac{E}{c^2} = \frac{[mAv^2]}{c^2} \quad (\text{Energy: mass, quanta; EM Field}) = n\pi_{\text{mass}}\left[[\varepsilon_0\mu_0].[mAv^2]\right] \quad (\text{planck quanta; ElectroMagnetic, mass, velocity}) \quad E\left[\frac{1}{c^2}\right]$$

$$p \quad mv = [E].v = n\pi_{\text{mass}}\left[[\varepsilon_0\mu_0].[mv]\right] \quad (\text{EM Field; Planck quanta; ElectroMagnetic mass velocity}) \quad \frac{E}{v}$$

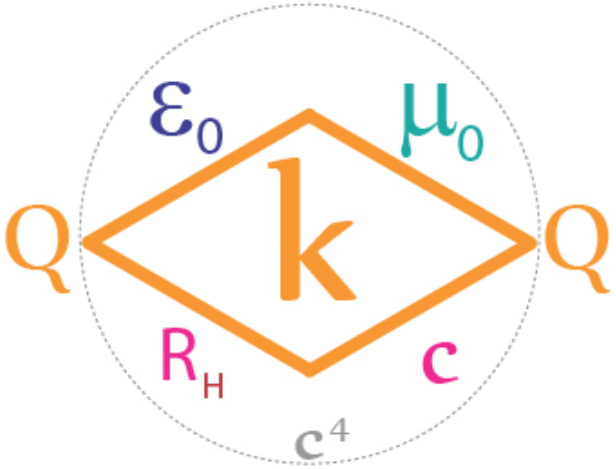
$$M \quad mv^2 = \frac{mv^2}{c^2} \quad (\text{EM Field}) = 4n\pi_{\text{Matter}}\left[[\varepsilon_0\mu_0].[mc^2]\right] \quad (\text{EM Field; Energy; ElectroMagnetic mass velocity}) \quad m\left[\frac{c^2}{c^2}\right]$$

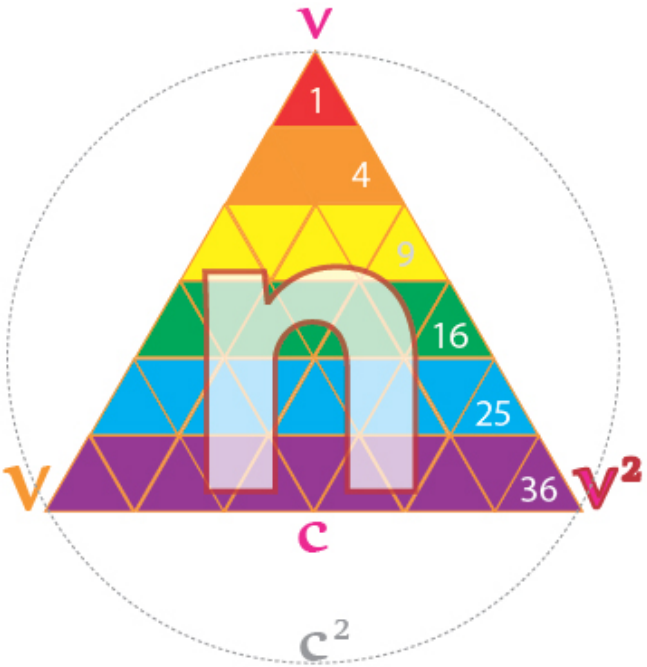
Energy in Matter propagates at c

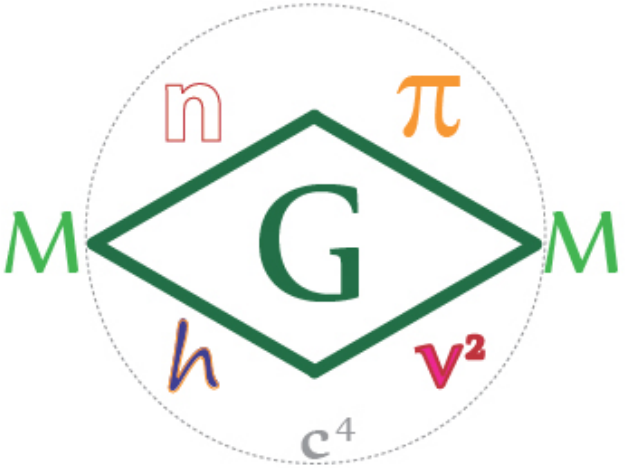
$$KE \quad 1/2\,Mv^2 = 1/2\left[4\left[\frac{[mAv^2]}{c^2}\right]\right] \quad (\text{Energy: mass, quanta; EM Field}) = 2\pi_{\text{Photons}}\left[[\varepsilon_0\mu_0].[mAv^2]\right] \quad (\text{planck quanta; ElectroMagnetic, mass, velocity}) \quad 2m\left[\frac{v^2}{c^2}\right]$$

The geometry of Constants

Tetryonic geometry is the source of all physical Constants

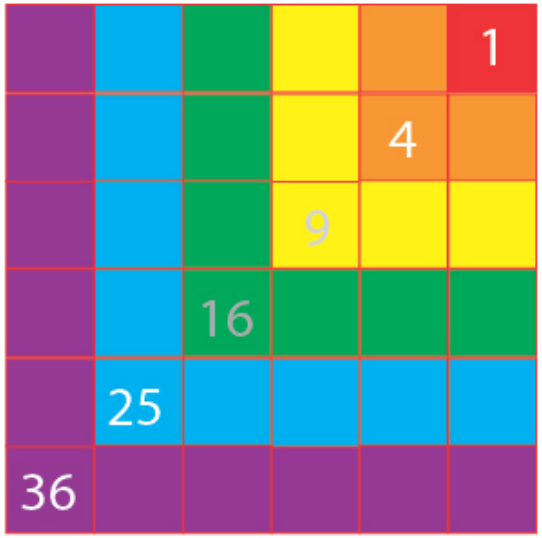


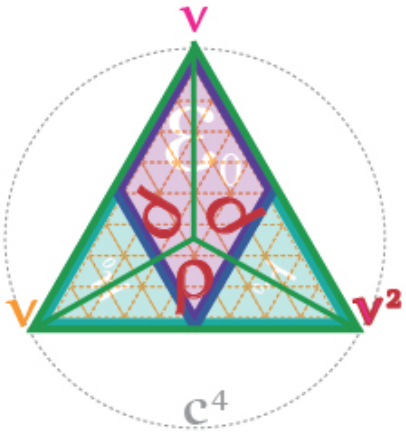




A physical constant is a physical quantity that is generally believed to be both universal in nature and constant in time.

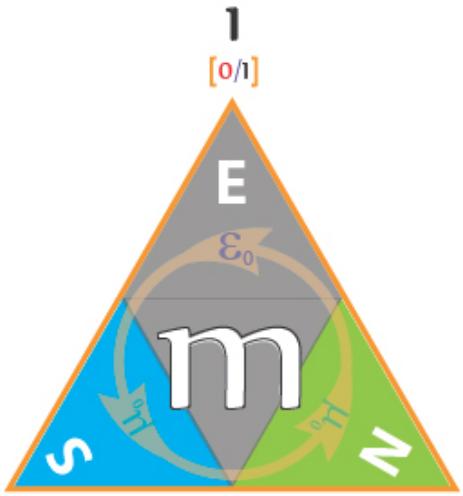
It can be contrasted with a mathematical constant, which is a fixed numerical value but does not directly involve any physical measurement





Planck's Constant

[mass-Energy quantum Angular momenta]



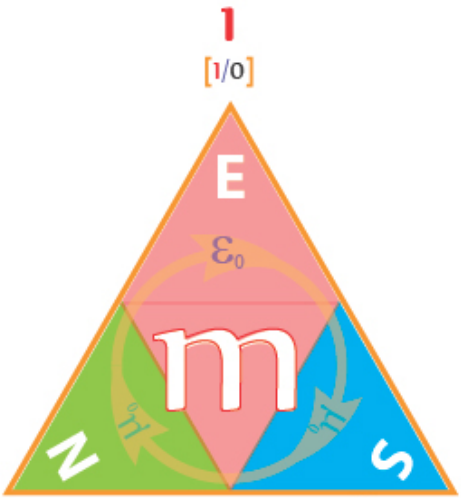
Max Planck

(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.

$E = n.h\nu$

"Let us call each such part the energy element E"



N_A

1 mole of Hydrogen atoms
has a rest-mass of 1 gram

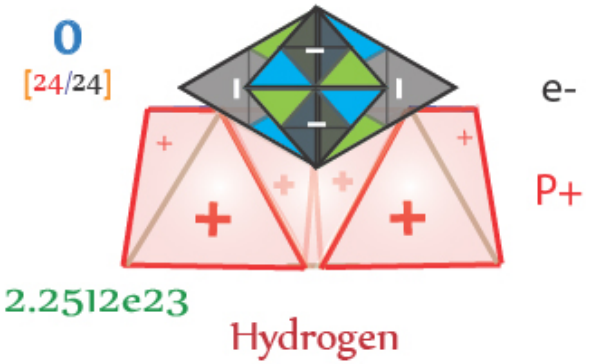
Solving for Planck's Constant using Tetryonics
we obtain an exact corrected value of :

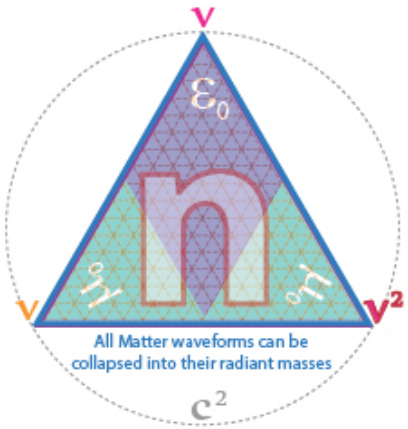
$\pm 6.629697947 \times 10^{-34}$ J.s

$4.136029659 \times 10^{-15}$ eV.s

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

A n-level rest mass
Hydrogen atom
is comprised of
2.2512e23 quanta





$$T\pi\left[\left[\varepsilon_0\mu_0\right].\left[mAv^2\right]\right]$$

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

Planck's constant is the relationship between
EM mass-Energy and Quantised Angular Momentum
that provides the basis for EM charge in
Tetryonic geometry

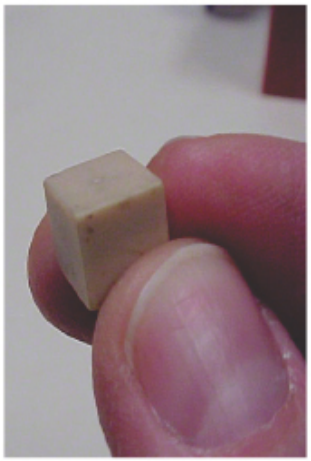
Avagadros Number

Amedeo Avogadro

(9 August 1776 – 9 July 1856)

Using the Tetryonic rest mass of
22,512n Planck quanta for HYDROGEN
the number of Hydrogen atoms in 1 gram
AVAGADRO's NUMBER
(and any other molar mass)
can be determined directly from theory

$1e19\mathbf{v} = \mathbf{n} = 5e18f$



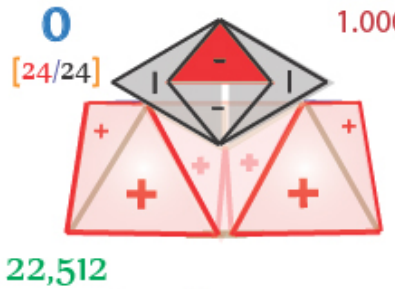
atomic mass unit

$$1\ \mathrm{u} = \frac{M_\mathrm{u}}{N_\mathrm{A}} = 1.660\,538\,782(83) \times 10^{-24}\ \mathrm{g}$$

Avogadro = 6.022141794 x 10^{23}

$$N^{-1} = \frac{m_H}{22{,}512}$$

[Hydrogen mass]
1.660538783 x 10^{-24} g



n0 1 mol = 1 g

Hydrogen = 1.660538783 x 10^{-27} Kg

n1 1 mol = 1.000533 g

n0 1 mol = 11.996801 g

Carbon 12 = 1.99178352 x 10^{-26} Kg

n1 1 mol = 12 g

Hydrogen's Teryonic [n] mass
is 22,512 Planck quanta
[Proton -22,500 + electron 12]

$$\left[22{,}512\left[\left[\varepsilon_0\mu_0\right].\left[mAv^2\right]\right]\right]^{-1}$$

EM Field — ElectroMagnetic; Planck quanta — mass, velocity

The inverse mass of Hydrogen is
equal to Avagadros number

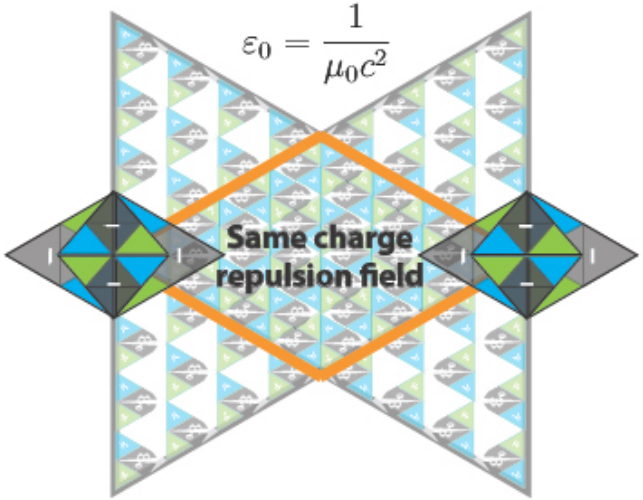
Coulomb's Constant

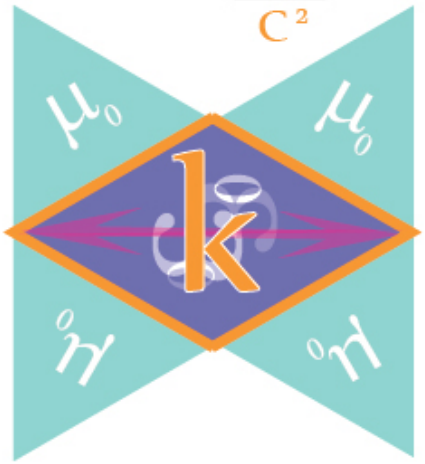
$$k = \frac{1}{4\pi\varepsilon_0}$$

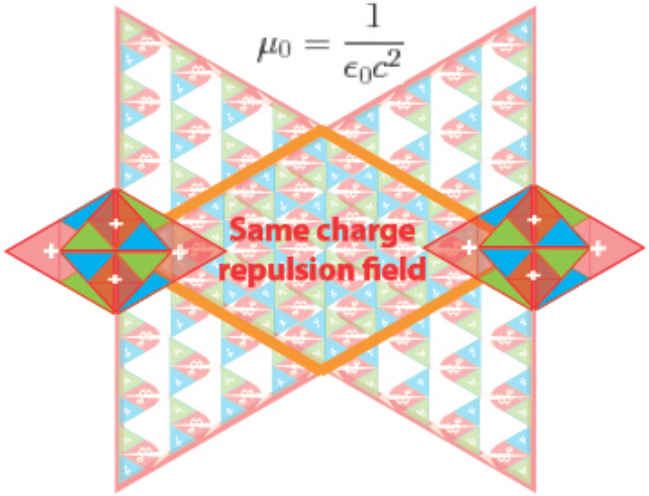
The proportionality constant ke, called the Coulomb constant (sometimes called the Coulomb force constant), is related to defined properties of EM Energy-momenta and is used to define Electric field forces

$$c = \frac{1}{\sqrt{\mu_0 \varepsilon_0}}$$

$$8.987\ e9\ \frac{Nm^2}{C^2}$$





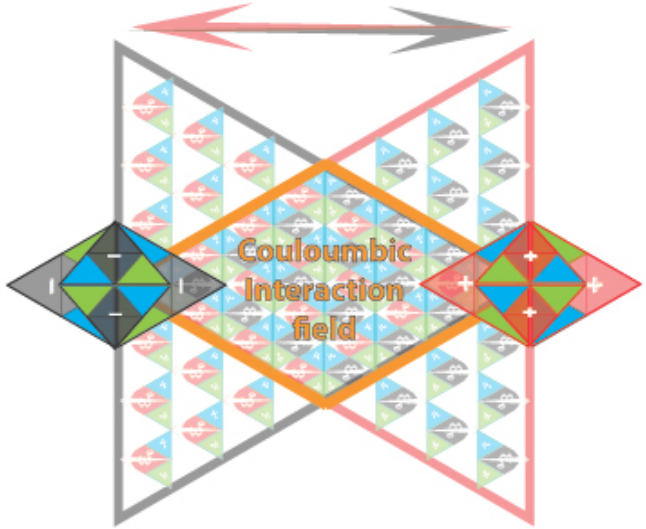


Similars repel

Opposites attract

Similars repel

Linear Coulombic force interactions are a result of charged E field linear momenta



Longitudinal E field forces between Charged particles are mediated by Photons

$$\mathbf{E} = \frac{\mathbf{F}}{q_t}$$

The Electric field can be defined by the Force exerted by a Charge

It is a measure of the electrostatic interactions produced by the Electric field Energy-momenta of two superpositioned charge KEM fields

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

The Electric field can also be derived from Coulomb's Law

The Speed of EM Energy

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 $c = 1/\sqrt{\varepsilon_0 \mu_0}$.

EM waves and energy momenta can propagate as either Transverse or Longitudinal waveforms with respect to their velocity vector

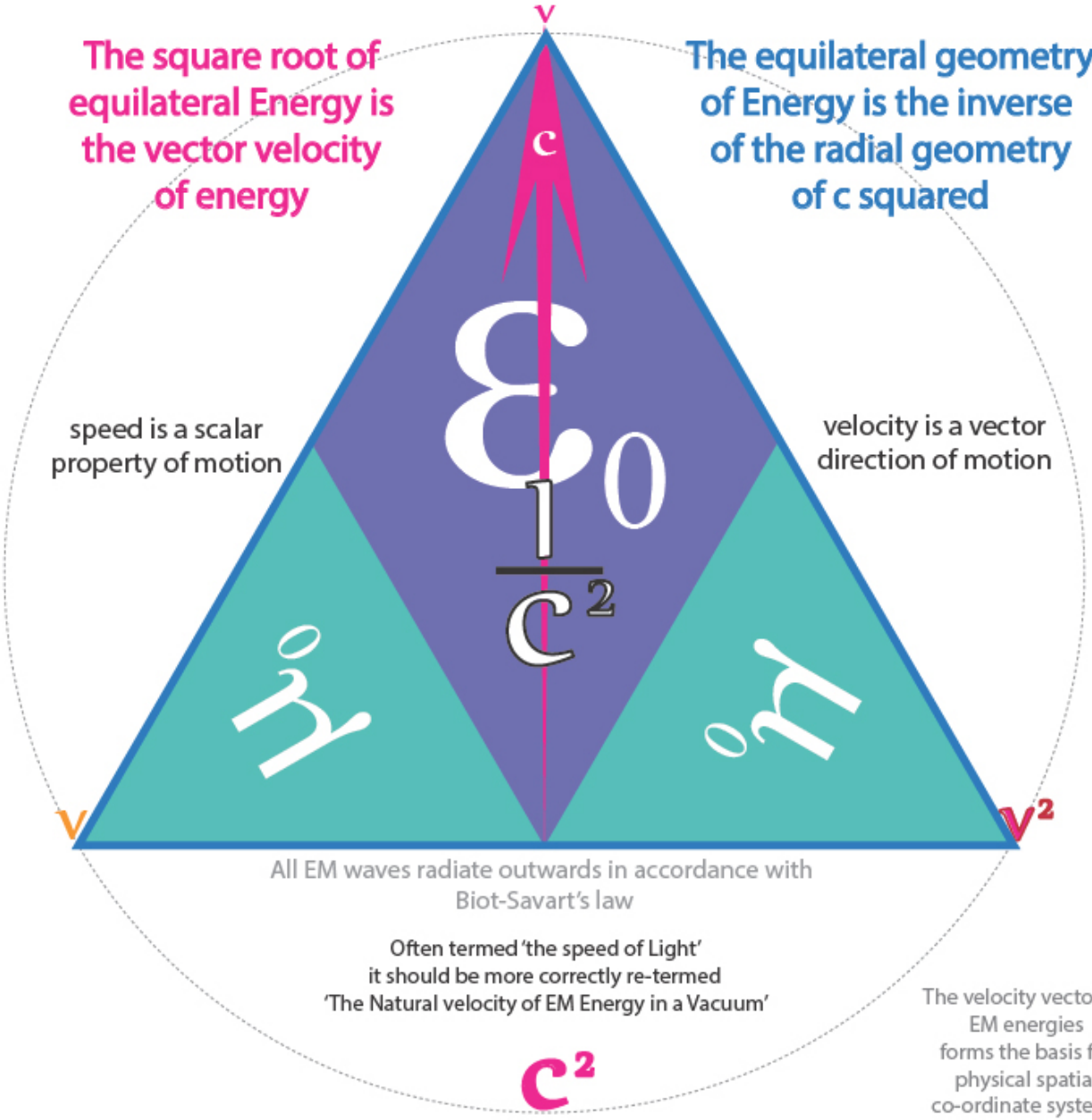
1 metre

$c = \frac{1}{299{,}792{,}456}$

The distance light travels in 1 second

The square root of equilateral Energy is the vector velocity of energy

The equilateral geometry of Energy is the inverse of the radial geometry of c squared



All EM waves radiate outwards in accordance with Biot-Savart's law

Often termed 'the speed of Light' it should be more correctly re-termed 'The Natural velocity of EM Energy in a Vacuum'

c^2

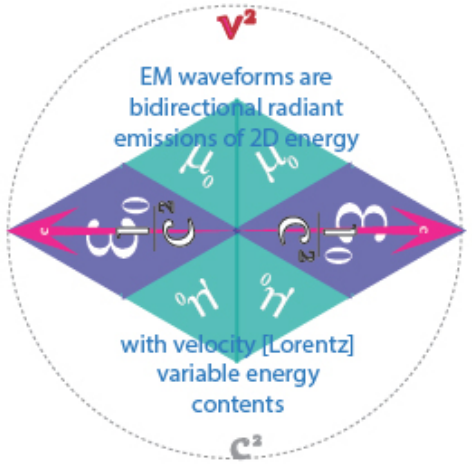
The natural speed of ElectroMagnetic Energy can be calculated using EM permittivity & permeability

$$\frac{K_E}{K_M} = 9e16 \ \frac{\frac{N\,m^2}{c^2}}{\frac{N\,s^2}{c^2}}$$

$$c^2 = 9e16 \ \frac{m^2}{s^2}$$

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

The speed of light in a vacuum is defined as 299,792,458 meters per second (1,079,252,848.8 km/h).



All EM waves and energy are symmetrical waveforms whose quanta contain ElectroMagnetic fields and momentum

The velocity vector of EM energies forms the basis for physical spatial co-ordinate systems

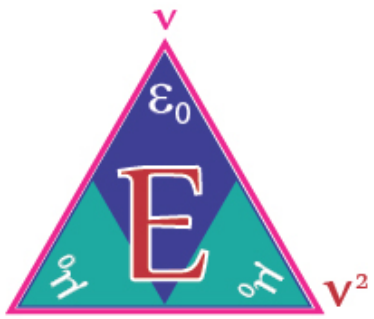
Quantum masses

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

$$\mathrm{kg}\,\frac{\mathrm{m}^2}{\mathrm{s}}\,\frac{1}{\mathrm{s}} \qquad \mathrm{kg}\,\frac{\mathrm{m}^2}{\mathrm{s}^2} \qquad \mathrm{kg}\,\frac{\mathrm{m}^2}{\mathrm{s}^2}$$

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 planck quanta

$$[\varepsilon_0\mu_0] \quad [mA\nu^2]$$

mass velocity

1.112650056 e-17 s2 m-2

6.629432435 e-34 kg m2 s-2

Permittivity x Energy density

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

mass = 7.376238376 x 10^{-51} Kg

Planck-Einstein

mass velocity

Planck quanta

$$h$$

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

6.629432351 e-34 J

Planck quanta

$$[mA\nu^2]$$

mass velocity

7.376238376 e-51 kg

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

$$m$$

Tetryonic charge geometry

The mass of Matter

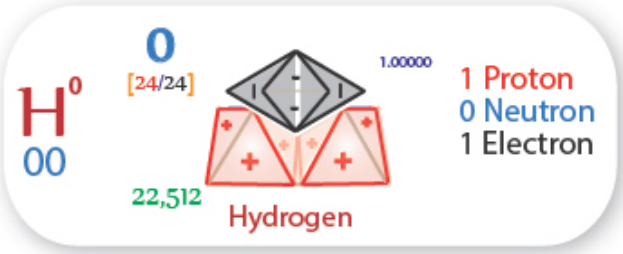
EM Field Planck quanta

$$T\pi \quad [[\varepsilon_0\mu_0].[mA\nu^2]]$$

ElectroMagnetic mass velocity

mass Quantum

Tetryonic molar mass [Hydrogen] - 1 g



$$\text{Molar mass} = \frac{H_1\ \text{Atomic mass}}{\text{Avagadro's No.}}$$

$$\text{mass}\,H_{mol}/Av = \frac{.001}{6.02214179 \times 10^{23}}$$

$$= 1.660538783 \times 10^{-27}\ \text{g/mol}$$

$$H_{mole} / \triangle[H] = \frac{1.660538783 \times 10^{-27}}{22{,}512}$$

mass = 7.376238376 x 10^{-32} Kg

Avagadro - Mandeleev

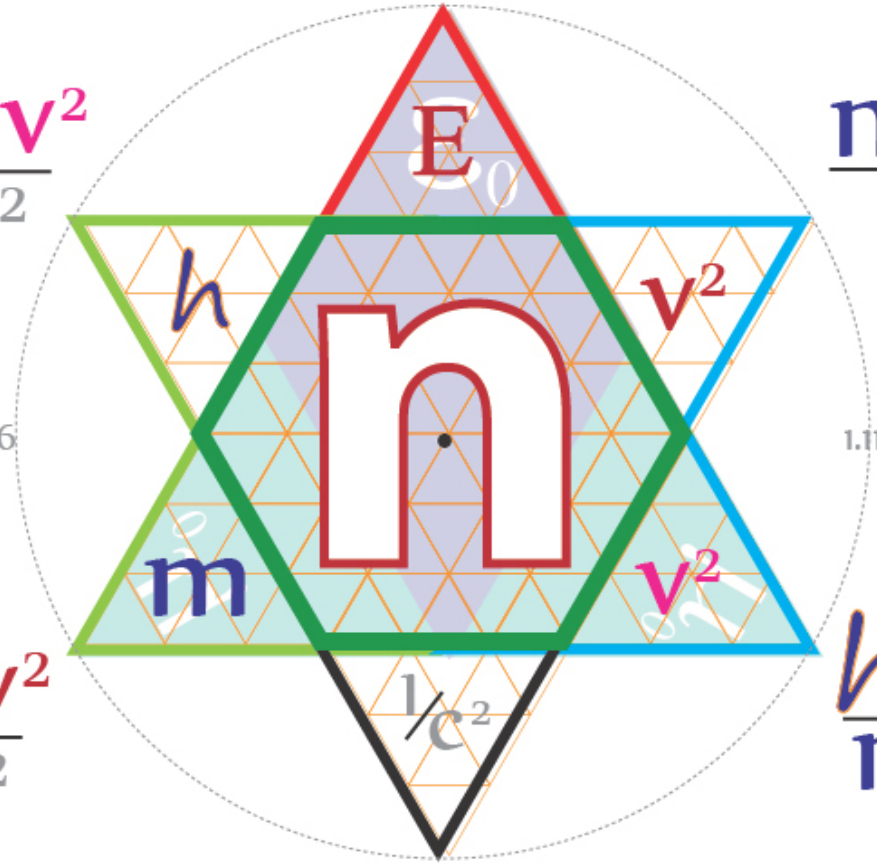
2D mass-Energy equivalence

'The Speed of Light' is the Natural velocity of Energy propagation

$$mv^2 = hv^2$$

Energy

EM mass



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

$\frac{c^2}{v^2}$ 8.987551787 e16 1.112650056 e-17 $\frac{m}{h}$

$\frac{hv^2}{c^2}$ $\frac{hv^2}{m}$

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

Photons

Matter

Tetryonics and Matter

[Matter has EM mass-Energy momentum and volume]

$$1\pi \left[\left[\varepsilon_0 \mu_0 \right] . \left[mAv^2 \right] \right]$$

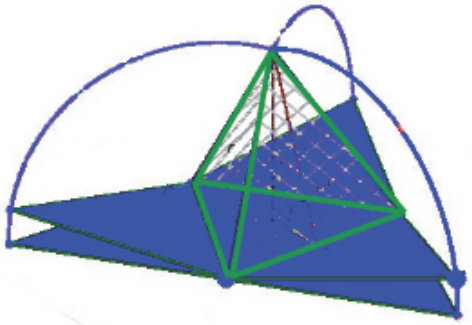
Quanta; EM Field; Planck quanta; ElectroMagnetic; mass; velocity

T=1π

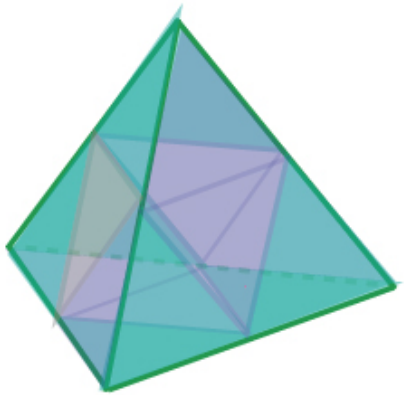
mass-Energy

Zero Point Fields

4π mass-Energy geometry



3D MATTER



Matter is a 3D tetrahedral standing wave geometry of mass-energy propagating at c

[2,8,18,32,50,72,98,128.....]

$$2\pi \left[\left[\varepsilon_0 \mu_0 \right] . \left[mAv^2 \right] \right]$$

Photons; EM Field; Planck quanta; ElectroMagnetic; mass; velocity

T=2π

EM energy carriers

Photons

Bosons

Charge Carriers

T=3π

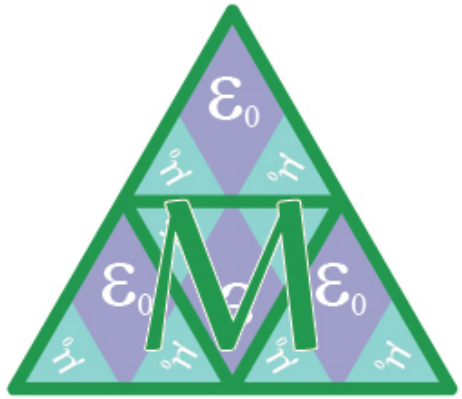
$$\text{ODD}\pi \left[\left[\varepsilon_0 \mu_0 \right] . \left[mAv^2 \right] \right]$$

Bosons; EM Field; Planck quanta; ElectroMagnetic; mass; velocity

[1,3,5,7,9,11,13,15.....]

Matter

T=4π



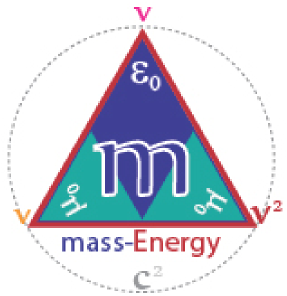
$$4n\pi \left[\left[\varepsilon_0 \mu_0 \right] . \left[mAv^2 \right] \right]$$

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

[4,12,24,36,48,72,84,168,.....]

Rest mass and Matter

2D — m — mass — kg



EM Field — Planck — quanta

$$n\pi\left[[\varepsilon_0\mu_0].[mAv^2]\right]$$

mass — ElectroMagnetic — mass — velocity

M — Matter — kg — 3D

Quanta number

1e19 v

Compton frequency

Matter is three dimensional Charged mass-Energy geometry

EM Field — Planck — quanta

$$M = 4n\pi\left[[\varepsilon_0\mu_0].[mAv^2]\right]$$

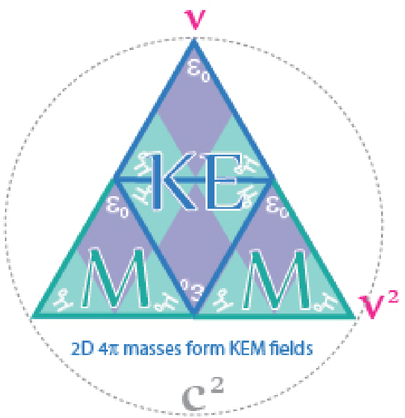
Matter — ElectroMagnetic — mass — velocity

Energy density is mass - the term 'massless particle' is a misnomer

Quantum number

n

Nuclear Level

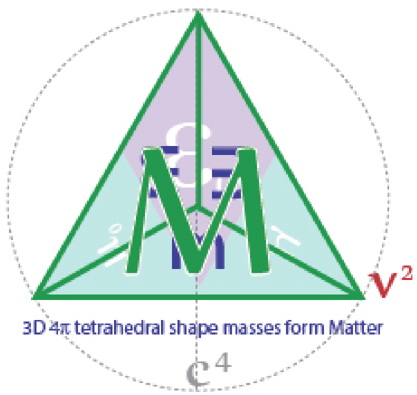


Kinetic Energies

RE = Matter + KE

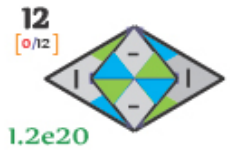
Relativistic mass is the total EM energy content of a massive body (or system) in motion

The relativistic rest mass of Matter is invariant as it is a EM standing wave contianing mass- Energy that always propagates at the speed of Light



Matter

Tetryonic Charge and Rest masses



n=0

Electron

Tm Electron = 12

Electron Charge $-1.602845472 \times 10^{-19}$ c

Electron rest mass $8.851486051 \times 10^{-31}$ kg

$7.955318928 \times 10^{-14}$ J

496,324.7 eV [496324 Mev]

Proton

n=25^2

Tm Proton= 22,500

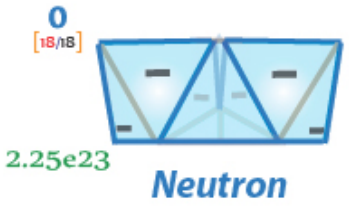
Proton Charge $+1.602845472 \times 10^{-19}$ c

Proton rest mass $1.659653635 \times 10^{-27}$ kg

$1.491622299 \times 10^{-10}$ J

930,608,923.3eV [930.6Mev]

Protons and Neutrons have eqivalent masses and geometries but differing charges



Neutron

n=25^2

Tm Neutron= 22,500

Neutron Charge 0

Neutron rest mass $1.659653635 \times 10^{-27}$ kg

$1.491622299 \times 10^{-10}$ J

930,608,623.3 eV [930.6 Mev]

Quantum Convertor geometry

When Protons and Electrons interact to form Neutral Hydrogen the electron's quantum level increases in proportion to the Proton's

Hydrogen

n=1

n=25^2

Tm Hydrogen= 22,524

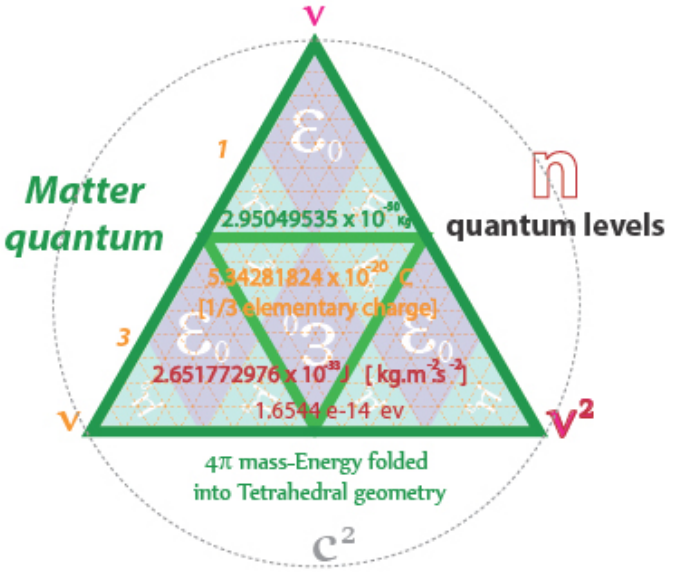
Hydrogen = Proton + electron

H Charge 0

H rest mass $1.661423932 \times 10^{-27}$ kg

$1.493213363 \times 10^{-10}$ J

931,601,572.9eV [931.6 MeV]



$$4n_{\text{mass}} = T\pi_{\text{Matter}}\left[\left[\varepsilon_0\mu_0\right].\left[mAv^2\right]\right]$$

EM Field: ElectroMagnetic; Planck quanta: mass, velocity

4 mass-Energies interacting at Tetrahedral angles creates 'Matter' quanta

$$M = T\pi_{\text{Matter}}\left[\left[\varepsilon_0\mu_0\right].\left[mAv^2\right]\right]$$

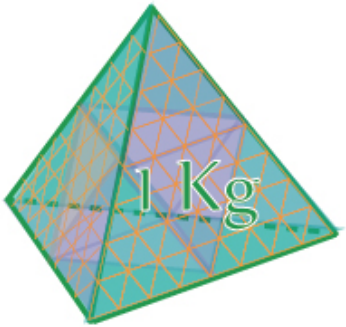
EM Field: ElectroMagnetic; Planck quanta: mass, velocity

$$\text{Relativistic Energy (J)} = 4[\text{mass} \times c^2]_{\text{[Matter]}}$$

$$E = \left[mAv^2\right]_{\text{mass, velocity}}$$ planck QAM quanta

$$\text{mass (eV)} = \frac{\text{Relativistic Energy}}{\text{elementary charge}}$$

$$e^- = 12q_{\text{elementary charge}} \qquad \frac{E_{\text{(total)}}}{1.602845472 \times 10^{-19}}$$



$E = mc^2$

mass - Energy equivalence

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

mass	m = 7.376238371 e-32	?	kg
Velocity squared	c^2 = 8.987551787 e16	$\frac{m^2}{s^2}$	c^2
Energy	E = 6.629432435 e-15	$\frac{kg\ m^2}{s^2}$	J
Planck Constant	h = 6.629432435 e-34	$\frac{kg\ m^2}{s}$	J.s
Compton Frequency	v^2 = 1.000 e19	$\frac{1}{s}$	Hz

$E = Mc^4$

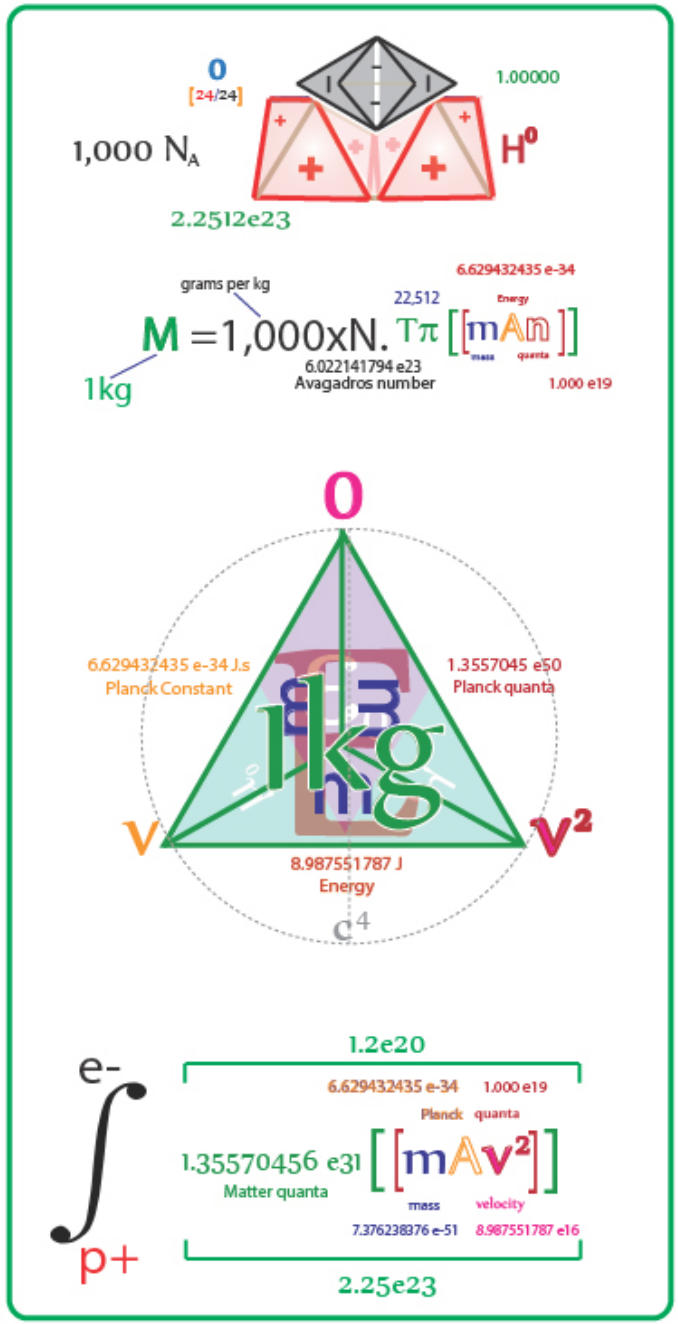
Tetryonic Matter

$$4n\pi\left[\left[\varepsilon_0\mu_0\right].\left[mAv^2\right]\right]$$

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

Electric Constant $\varepsilon_0 = \frac{1}{\mu_0 c^2}$	ε_0 = 8.85418782e-12	$\frac{A^2\ s^4}{kg\ m^3}$	F/m
Magnetic Constant $k_e = \frac{1}{4\pi\varepsilon_0}$	μ_0 = 1.25663706e-6	$\frac{kg\ m}{A^2\ s^2}$	H/m
Vacuum Permitivity $\varepsilon_0\mu_0 = \frac{1}{c^2}$	$\varepsilon_0\mu_0$ = 1.112650056e-17	$\frac{s^2}{m^2}$	$\frac{1}{c^2}$

1 Kg of Matter



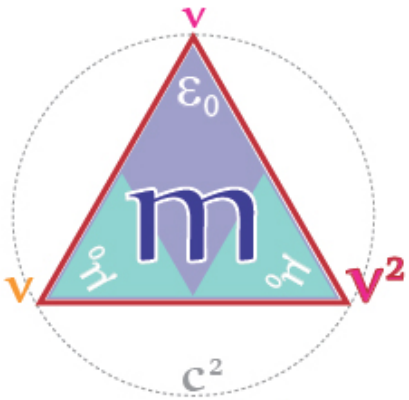
EM mass and Matter defined

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 functions in detail.

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

EM mass



$$\beta = \left[\frac{v}{c}\right]$$

mass is the Lorentzian corrected, velocity related, energy content of Tetryonic geometries

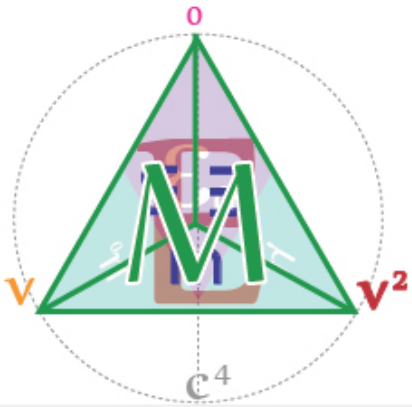
$$4\pi \underset{\text{Tetryons}}{} \left[\left[\varepsilon_0\mu_0\right].\left[mAv^2\right]\right]$$

EM Field — Planck quanta — ElectroMagnetic — mass — velocity

All forms of EM mass-Energy are subject to Lorentz corrections

$$\beta^2 = \left[\frac{v}{c}\right]^2$$

Matter is Lorentz invariant as its mass-Energies propagate in a 4π standing wave geometry



2D mass-Energies

$$n\pi \underset{\text{mass}}{} \left[\left[\varepsilon_0\mu_0\right].\left[mAv^2\right]\right]$$

EM Field — Planck quanta — ElectroMagnetic — mass — velocity

$$n\pi \underset{\text{Energy}}{} \left[\left[mAv^2\right]\right]$$

Planck quanta — mass — velocity

Energy

EM mass is a measure of equilateral scalar Energy per unit of Time

3D Matter are comprised of 2D EM mass-Energies

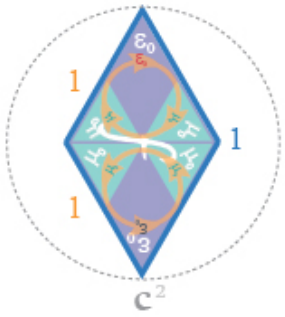
2D EM mass-Energy cannot contain 3D Matter

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

$$\text{ODD}\pi \underset{\text{Bosons}}{} \left[\left[\varepsilon_0\mu_0\right].\left[mAv^2\right]\right]$$

EM Field — Planck quanta — ElectroMagnetic — mass — velocity

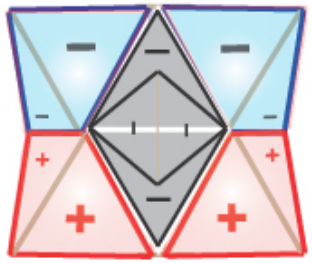
$$\text{EVEN}\pi \underset{\text{EM waves}}{} \left[\left[\varepsilon_0\mu_0\right].\left[mAv^2\right]\right]$$

EM Field — Planck quanta — ElectroMagnetic — mass — velocity

$$4n\pi \underset{\text{Matter}}{} \left[\left[\varepsilon_0\mu_0\right].\left[mAv^2\right]\right]$$

EM Field — Planck quanta — ElectroMagnetic — mass — velocity

3D Matter is the property resulting from the charged Tetrahedral volumes produces by 4π standing wave EM mass-Energies



$$12\pi \underset{\text{electrons}}{} \left[\left[\varepsilon_0\mu_0\right].\left[mAv^2\right]\right] \quad e^-$$

EM Field — Planck quanta — ElectroMagnetic — mass — velocity

$$72\pi \underset{\text{Nuclei}}{} \left[\left[\varepsilon_0\mu_0\right].\left[mAv^2\right]\right] \quad \text{Deuteron}$$

EM Field — Planck quanta — ElectroMagnetic — mass — velocity

Matter

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

Charge-mass-Amps

Charles-Augustin de Coulomb

(14 September 1736 – 23 August 1806)

A Coulomb is equal to exactly
6.238904607 e18 elementary charges.

C

$1\,\mathrm{C} = 1\,\mathrm{A} \cdot 1\,\mathrm{s}$

As

A

$1\,\mathrm{A} = 1\,\frac{\mathrm{C}}{\mathrm{s}}$

$\frac{C}{s}$

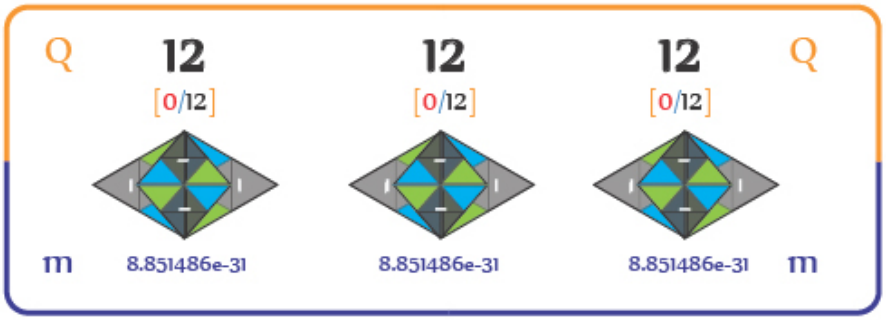
Andre Ampere

(20 January 1775 – 10 June 1836)

An Ampere is a Coulomb per second.
a measure of the rate at which charge moves.

$$F = k\,\frac{Q_1\,Q_2}{r^2}$$

It is defined as the nett Charge
transported by a steady current of
one Ampere in one second.



A coulomb is the quantity of charge transported by one amp for one second

$$F = 2k_A\,\frac{I_1\,I_2}{r}$$

6.241509 e18 electrons passing a
given point per second constitutes
one Ampere.

C

1 Coulomb of nett charge is comprised of

$(12 \times 1.335146688\ \text{e-}20)^{-1}$

6.238904607 e18 electrons

$\frac{kg}{s}$

EM mass-charge ratios

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

are the basis for mass spectroscopy

A

1 Amp of electrons has a EM mass of

6.238904607 e18 x 8.851486 e-31

5.52235771 e-12 kg

$\frac{s}{kg}$

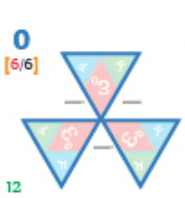
mass - Charge - Matter geometries

Matter Geometry is determined by Tetryonic Charge T[q]

Differing nett Charges

$$Tq = 12\pi$$

Same Tetryonic Number
Same Geometry



Any measurement of a system's mass is subject to velocity corrections

mass = EM energy density

$$n\pi\left[mAv^2\right]$$

Planck quanta; mass; mass; velocity; mass quanta; Spatial geometry c^2

n [7.376238376 e-51] kg

EM mass is a measure of 2D planar energies comprising the fascia of charged geometries

ENERGY

$$n\pi\left[\left[mAv^2\right]\right]$$

Planck quanta; mass; velocity

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

$$\frac{n\pi}{c^2}\left[\left[mAv^2\right]\right]$$

mass; Planck quanta; mass; velocity

$$\frac{T\pi}{c^4}\left[\left[mAv^2\right]\right]$$

Matter; Planck quanta; mass; velocity

Matter and Charge are velocity invariant

Differing Tetryonic Charge numbers produce differing particle geometries

Photons $\frac{2\pi}{c^2}\left[\left[mAv^2\right]\right]$ Fermions $\frac{12\pi}{c^4}\left[\left[mAv^2\right]\right]$ Baryons $\frac{36\pi}{c^4}\left[\left[mAv^2\right]\right]$

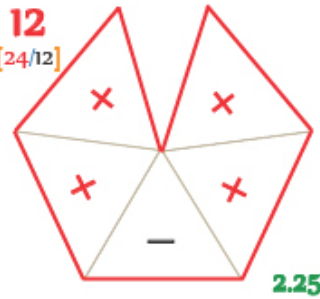
0 [v/v]

2

12 [12/24]

1.2e20

12 [24/12]



2.25e23

As the energy levels of particles and fields increase their intrinsic Planck quanta and EM mass increases but their charge geometries remain the same

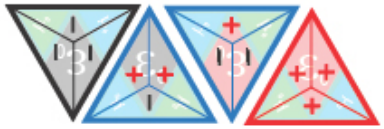
The Energy content of any physical system remains the same irrespective of the spatial co-odinates used

Charged mass-Energies

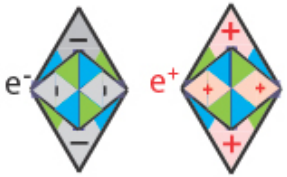
All 3D Matter particles are comprised of charged fascia whose energy content determines their 2D mass

ZPFs 1

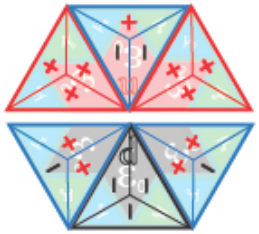
Tetryons 4



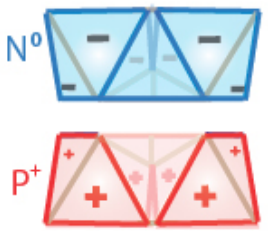
Leptons 12

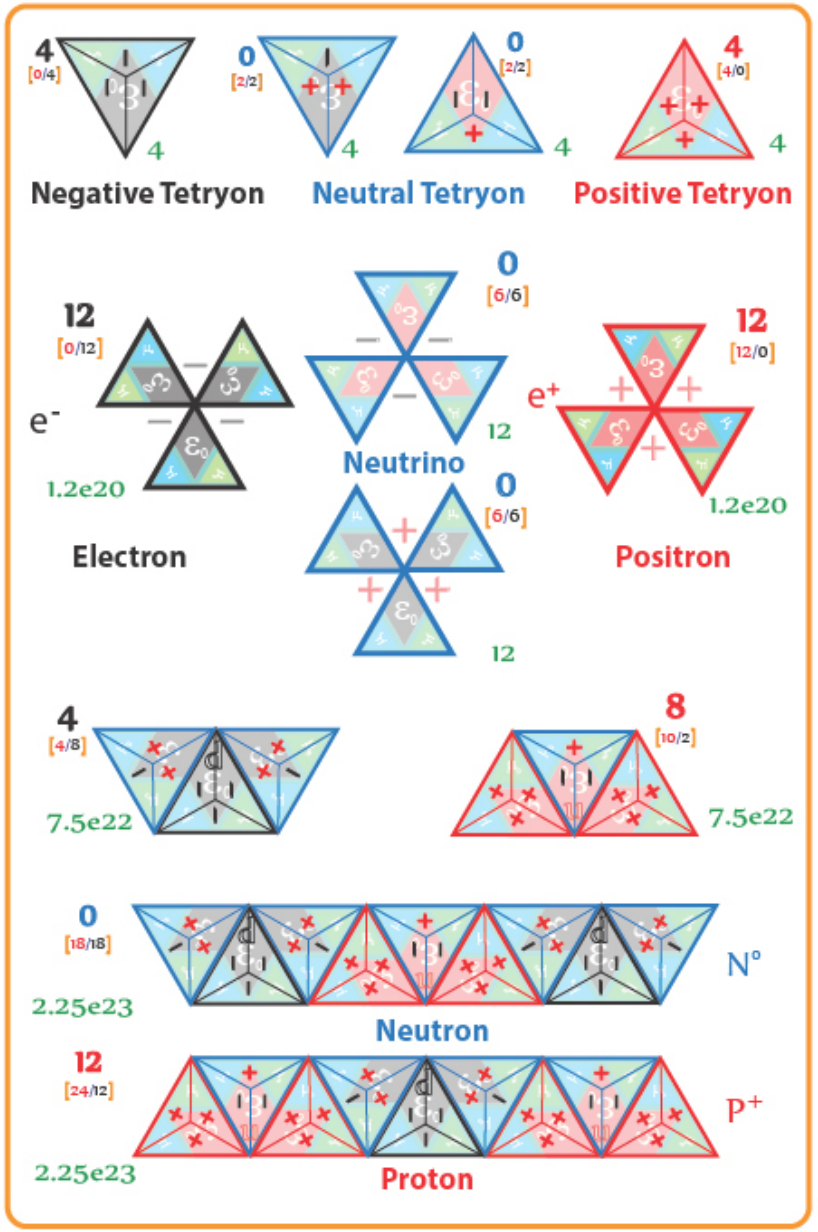


Quarks 12



Baryons 36





3D Matter geometries

$$\frac{T\pi}{c^4}\left[\left[mAv^2\right]\right]$$

Matter · Planck quanta · mass · velocity

Tetryons
4 charge fascia
4π $2.651772976 \times 10^{-33}$ j
$2.95049535 \times 10^{-50}$ kg
4 quanta

Neutrinos
12 charge fascia
12π $7.955318928 \times 10^{-33}$ j
$8.851486051 \times 10^{-50}$ kg
12 quanta

Leptons
12 charge fascia
12π $7.955318928 \times 10^{-14}$ j
$8.851486051 \times 10^{-31}$ kg
1.2×10^{20} quanta

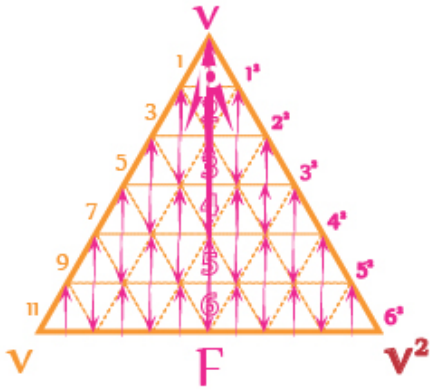
Quarks
12 charge fascia
12π $4.97207433 \times 10^{-11}$ j
$5.532178782 \times 10^{-28}$ kg
7.5×10^{22} quanta

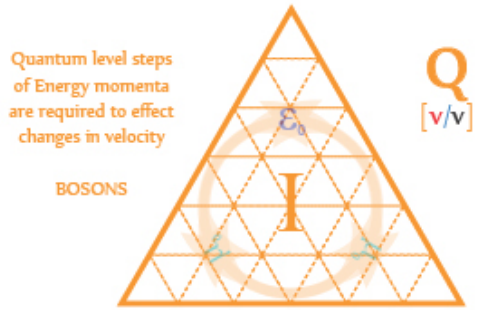
Baryons
36 charge fascia
36π $1.491622299 \times 10^{-10}$ j
$1.659653635 \times 10^{-27}$ kg
2.250×10^{23} quanta

Deuterium
72 charge fascia
ion
72π $2.983244598 \times 10^{-10}$ j
$3.319307269 \times 10^{-27}$ kg
4.5012×10^{23} quanta

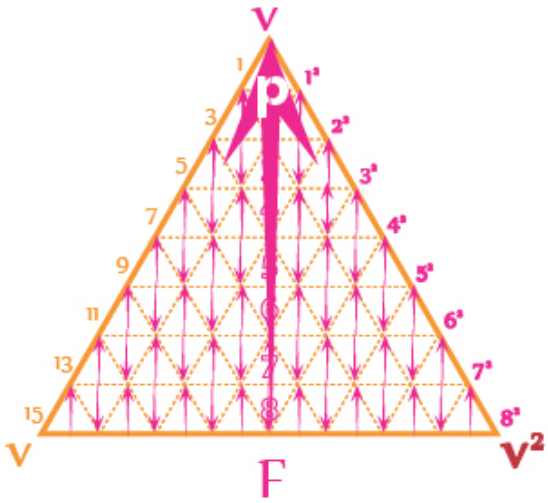
Inertial resistance to Force

Inertia is the resistance of any physical object
to a change in its state of motion.





Total Charge is reflective of the total Energy momenta comprising any EM field or Matter subject to acceleration [inertial mass]



$$M_0 = mc^2$$

The total intrinsic momenta of all energy waveforms is a sum of their constituent Quantised Angular momenta (mass-Energy momenta)

$E = mc^2$

Any change in motion results in changes to
the Charge geometries creating in turn proportional
changes to KEM mass and momenta components

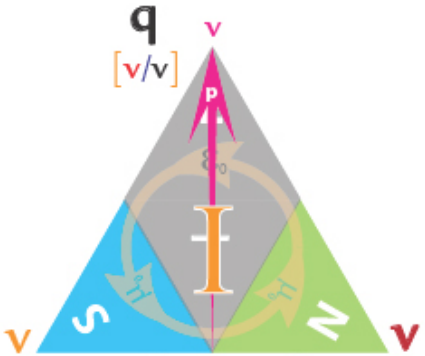
$$F = ma$$

The 'inductive resistance' of Charge quanta fields to changes in their nett mass-Energies is what we term Inertia

$$KEM = Mv^2$$

Matter in motion has Kinetic Energies in addition to invariant rest mass-Energy

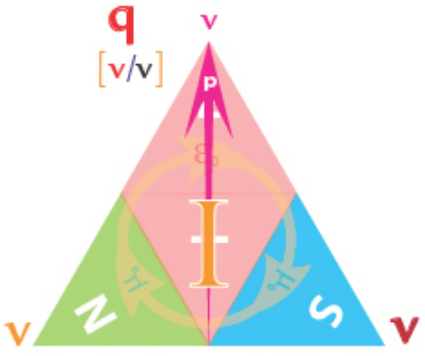
KE = RE - rest Matter



Quantised moment of Inertia

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

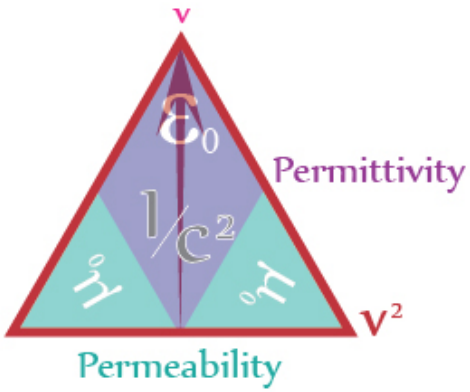
Any change to an object's velocity results in a corresponding change to its mass-Energy momenta which is reflected by its inertia



Quantised moment of Inertia

EM field densities

'mass-Energy quantum'



$$m$$

EM mass is the Energy density of
c^2 geometric fields

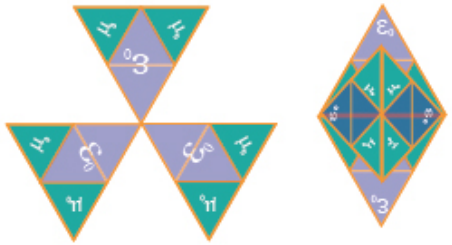
$$\frac{mv^2}{c^2} = \frac{E}{c^2} = \frac{hv^2}{c^2}$$

7.376238376 e-51 kg

Energy is only Matter in Tetrahedral geometries [T4π+]
[else it is Tπ EM mass-Energies that propagate away at c]

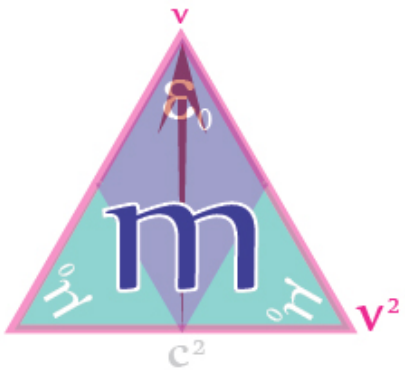
Rest Matter

8.851486051 e-31 kg



7.955318928 e-14 j

mass-Energy equivalence



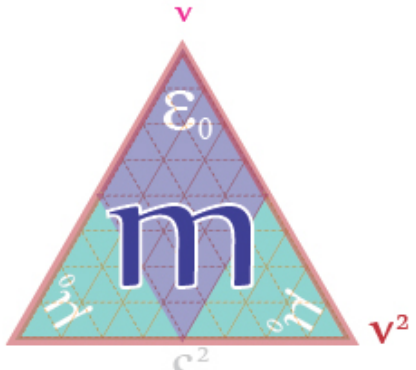
7.376238376 e-51 kg

6.62943244e-34 j.s

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

8.987551787 e16 $[m/s]^2$ 6.62943244 e-34 j quanta/sec

If reduced to a flat Euclidean space geometry
Matter becomes a high energy KEM field

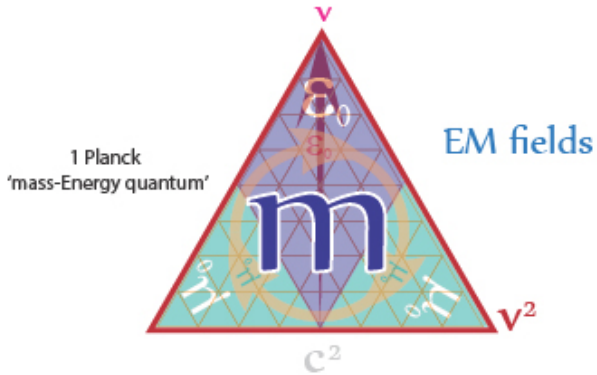


6.62943244 e-34 j
1 planck quantum has a
EM mass-Energy of
7.376238376 e-51 kg
and
Quantised Angular Momentum
which creates Charge
1.33570456 e-20 C

Energy compressed into $1/c^2$
geometries equates to EM mass

$$\beta^2 = \left[\frac{v^2}{c^2}\right]$$

and is subject to
Lorentz corrections
in 2D EM fields



EM fields

EM Fields and Matter particles

$$1\pi \text{ Charge } \left[\left[\varepsilon_0\mu_0\right].\left[mAv^2\right]\right]$$
EM Field · Planck quanta · ElectroMagnetic · mass · velocity

Q [v/v]

[odd]V

Bosons

2D Fields

Photons

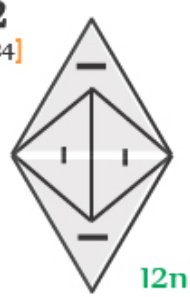
$$2\pi \text{ Photons } \left[\left[\varepsilon_0\mu_0\right].\left[mAv^2\right]\right]$$
EM Field · Planck quanta · ElectroMagnetic · mass · velocity

0 [v/v]

[even]V

$$12\pi \text{ Fermions } \left[\left[\varepsilon_0\mu_0\right].\left[mAv^2\right]\right]$$
EM Field · Planck quanta · ElectroMagnetic · mass · velocity

12 [12/24]



12n

Leptons

3D Matter

Baryons

$$36\pi \text{ Baryons } \left[\left[\varepsilon_0\mu_0\right].\left[mAv^2\right]\right]$$
EM Field · Planck quanta · ElectroMagnetic · mass · velocity

12 [24/12]

22,500n

$$n\pi \underset{\text{mass}}{} \left[\left[\varepsilon_0\mu_0\right].\left[mAv^2\right]\right]$$
EM Field · Planck quanta · ElectroMagnetic · mass · velocity

It is the Particle's angle of interaction between their inductive fascia geometries and any ElectroMagnetic fields that the produces the observed properties of mass and Matter.

2D non-Tetryonic Volume (EM Fields)

3D Tetryonic Volume (Matter)

Tetryonics provides a clear explanation of the mechanism providing all particles with their distinct properties of EM mass and Matter.

All Matter Particles have
3D volumes and interact
with external Electro-Magnetic fields

$$T\pi \text{ Matter } \left[\left[\varepsilon_0\mu_0\right].\left[mAv^2\right]\right]$$
EM Field · Planck quanta · ElectroMagnetic · mass · velocity

Invariant rest Matter

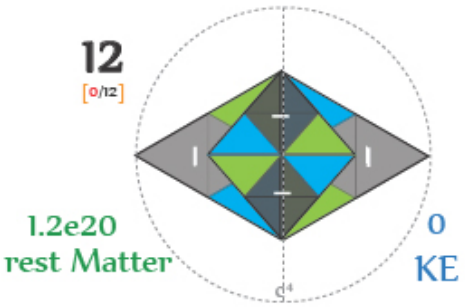
The Relativistic EM mass-Energy of a system in motion
is the sum of its invariant rest Matter and Kinetic Energies

Electron rest Matter Kinetic Energy field

$$RE = \underset{Fermions}{12\pi}\left[\frac{[mAv^2]}{c^4}\right] + \underset{Photons}{2\pi}\left[\frac{[mAv^2]}{c^2}\right]$$

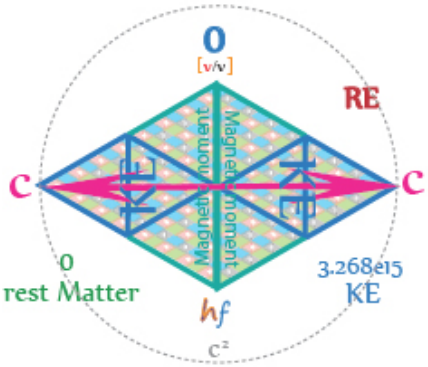
EM fields resulting from motion
are subject to Lorentz correction

All Matter are 3D
standing wave geometries



Electrostatic charges
have no Magnetic Moments

Photons are bidirectional
Kinetic EM Fields



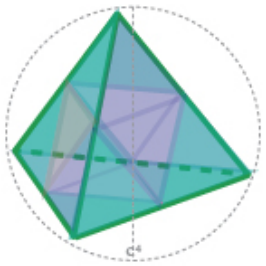
Wavelengths are proportional
to EM energy content

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

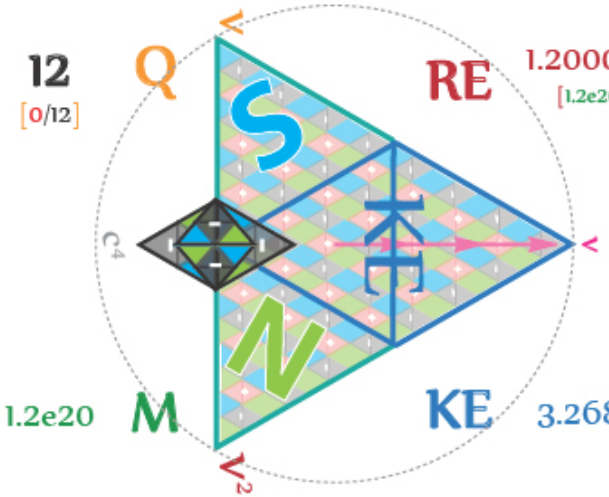
Kinetic mass-energies are divergent
from invariant rest Matter geometries
as a result of a particle's motion

At zero velocity the relativistic mass is equal to the invariant mass.

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



$$E = Mc^4$$



Rest Matter is composed of
4nπ standing wave geometries
and is INVARIANT
to Velocity changes

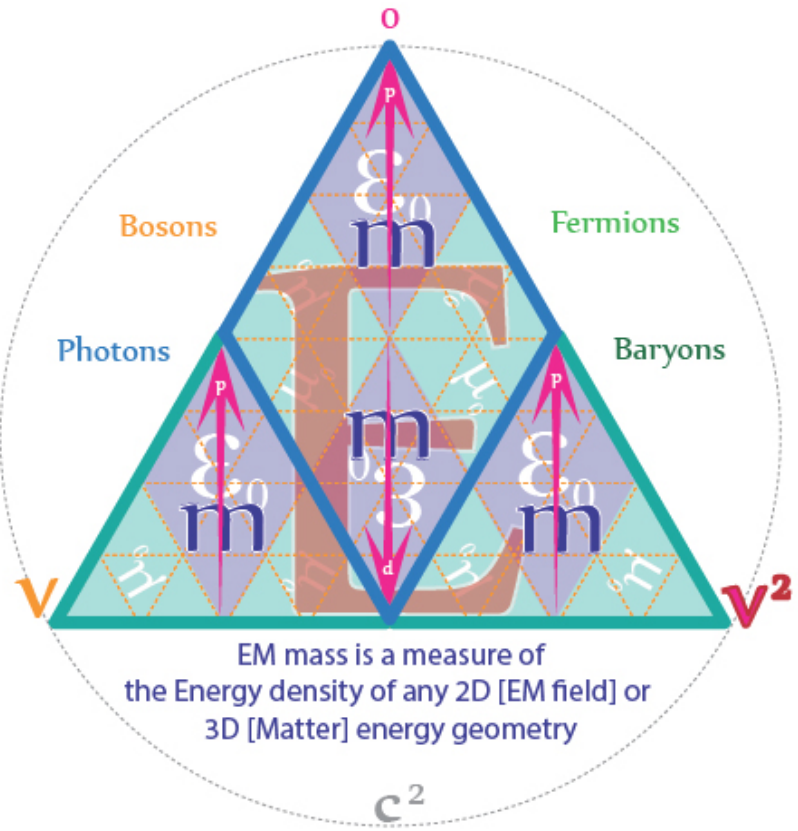
The energy which an object has due to its motion
will not add mass into the invariant rest Matter of the particle in motion
(it increases the total Planck quanta [EM mass] in its extended KEM field)

Matter in motion has a resultant
velocity related Energy field
that is produces the familiar
Kinetic energy and Magnetic moment

$$KEM = Mv^2$$

KEM field Energy is
directly related to the
Velocity changes of
massive particles

All EM fields and particles have
Inertia, Momentum, Electric and Magnetic fields,
resulting from their constituent mass-Energy quanta
which produce associated physical properties of
Compton Frequency and De Broglie Wavelength



EM mass-Energy momenta

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

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.

EM mass and Matter

All 3D Matter contains 2D EM mass-Energies
not all 2D EM mass-Energy forms 3D Matter

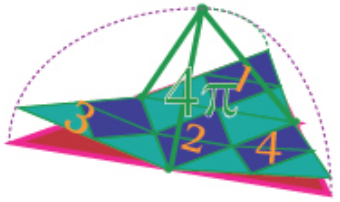
EM mass can be clearly defined as a measure of the total Energy density of any Tetryonic Space-Time geometry

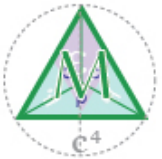
$$T\pi_{\text{Matter}}\left[\left[\varepsilon_0\mu_0\right].\left[mAv^2\right]\right]$$

EM Field · Planck quanta · ElectroMagnetic · mass · velocity

Matter is any mass-Energy that creates a 3D volume (4nπ Tetryonic geometry)

EM waves [FIELDS]
are distingushable from
Particles [MATTER]
due to their non-Tetrahedral geometries





$$\frac{E}{c^2} = m \qquad M = \frac{E}{c^4}$$

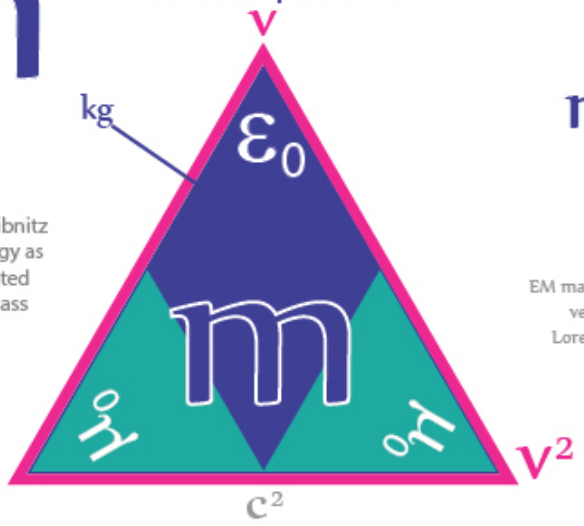
mass-Energy is a conserved property
Matter is not conservative

The term 'massless' is a misnomer and should be discontinued in its use as all Fields and Particles have EM mass [Energy quanta per c² geometry] [alternatives would be 2D, EM field, or Matterless]

mass-Energy-Matter equivalence

m

EM mass quantum



Newton and Leibnitz measured Energy as a velocity related function of mass

mass-velocity squared is Energy

$$\frac{n\pi}{c^2}\left[\left[\underset{\text{mass}}{m}\underset{\text{velocity}}{A}v^2\right]\right]$$ Planck quanta

n

The number of Energy quanta is related to velocity

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

Planck quantum

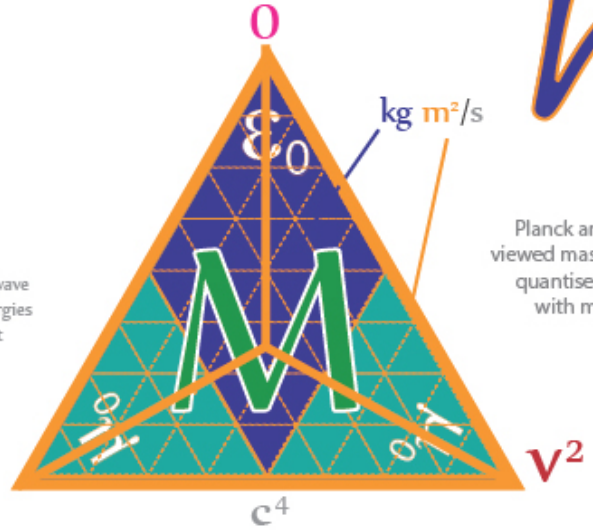
EM masses are subject to velocity related Lorentz corrections

Matter as a standing-wave of electromagentic energies is Lorentz invariant

Planck quanta

$$n\pi\left[\left[\underset{\text{mass}}{m}\underset{\text{velocity}}{A}v^2\right]\right]$$

Matter quantum



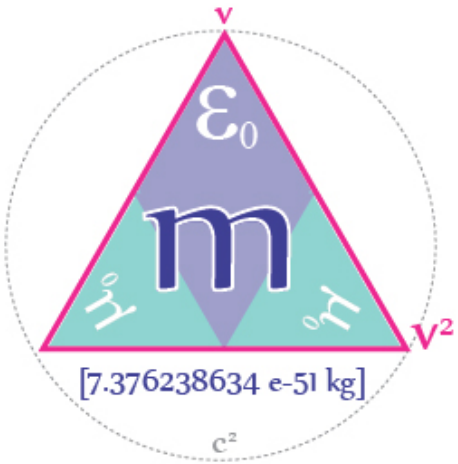
Planck and Einstein viewed mass-Energies as quantised particles with momenta

Planck quanta is Energy content

$$\frac{T\pi}{c^4}\left[\left[\underset{\text{mass}}{m}\underset{\text{velocity}}{A}v^2\right]\right]$$ Planck quanta

h

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



EM mass

[6.62943244 e-34 kg.m²/s²]

ENERGY

All failed to clearly differentiate the charged geometries of mass & Matter and the specific spatial co-ordinates used to measure and define them

Collapsed Matter

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

Unified Field Equation

for Tetryonic EM mass-Energy-Matter

m

M

$$\frac{n\pi}{c^2}\left[\left[mAv^2\right]\right]$$

mass Planck quanta

mass velocity

All forms of mass-ENERGY-Matter
are defined by their charged geometries and
the spatial co-ordinate systems used to measure them

$$\frac{T\pi}{c^4}\left[\left[mAv^2\right]\right]$$

Matter Planck quanta

mass velocity

$$T\pi\left[\left[\varepsilon_0\mu_0\right].\left[mAv^2\right]\right]$$

Tetryonic EM Field Planck quanta

geometry ElectroMagnetic mass velocity

$$n\pi\left[\left[\varepsilon_0\mu_0\right].\left[mAv^2\right]\right]$$

EM Field Planck quanta

mass ElectroMagnetic mass velocity

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

ODD Bosons

EM Field Planck quanta

ElectroMagnetic mass velocity

$$2\pi\left[\left[\varepsilon_0\mu_0\right].\left[mAv^2\right]\right]$$

2π Photons

EM Field Planck quanta

ElectroMagnetic mass velocity

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

EVEN π EM waves

EM Field Planck quanta

ElectroMagnetic mass velocity

nπ

Tπ

$$4\pi\left[\left[\varepsilon_0\mu_0\right].\left[mAv^2\right]\right]$$

4π Tetryons

EM Field Planck quanta

ElectroMagnetic mass velocity

$$12\pi\left[\left[\varepsilon_0\mu_0\right].\left[mAv^2\right]\right]$$

12π Fermions

EM Field Planck quanta

ElectroMagnetic mass velocity

$$24\pi\left[\left[\varepsilon_0\mu_0\right].\left[mAv^2\right]\right]$$

24π Mesons

EM Field Planck quanta

ElectroMagnetic mass velocity

$$36\pi\left[\left[\varepsilon_0\mu_0\right].\left[mAv^2\right]\right]$$

36π Baryons

EM Field Planck quanta

ElectroMagnetic mass velocity

Tetryonic
Unified Field Geometry

Energy

$n\pi\left[\left[mv^2\right]\right]$

mass velocity

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

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

kg

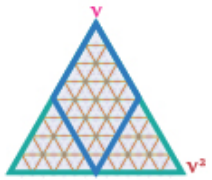
EM mass-energy

ElectroMagnetic mass velocity

$n\pi\left[\left[\varepsilon_0\mu_0\right].\left[mv^2\right]\right]$

$mv^2 = hv^2$

Scalar Quantised



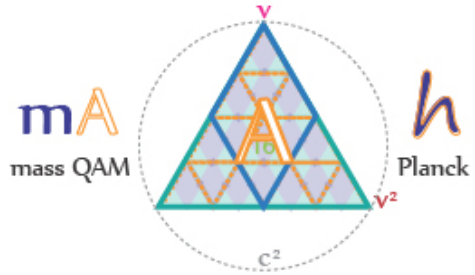
EM Field Planck quanta

charged

$n\pi\left[\left[\varepsilon_0\mu_0\right].\left[mAv^2\right]\right]$

geometry

ElectroMagnetic mass velocity



mA mass QAM

h Planck

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

Momenta / EM field

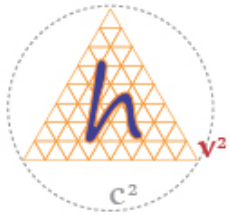
Charge

Quantised Energies

$n\pi\left[\left[hv^2\right]\right]$

Planck quanta

$kg\,\frac{m^2}{s}\,\frac{1}{s}$



$kg\,\frac{m^2}{s}\,\frac{1}{s}$

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

Planck mass-quanta

$n\pi\left[\left[\varepsilon_0\mu_0\right].\left[hv^2\right]\right]$

EM Field Planck quanta

Classical Mechanics

Quantum Mechanics

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

$kg\,\frac{m^2}{s}\,\frac{1}{s}$

q Charge $\quad s$

E Energy $\quad$ Planck quanta $[mAv^2]$ (mass, velocity)

$[\varepsilon_0 \mu_0 A]$ ElectroMagnetic QAM

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

m

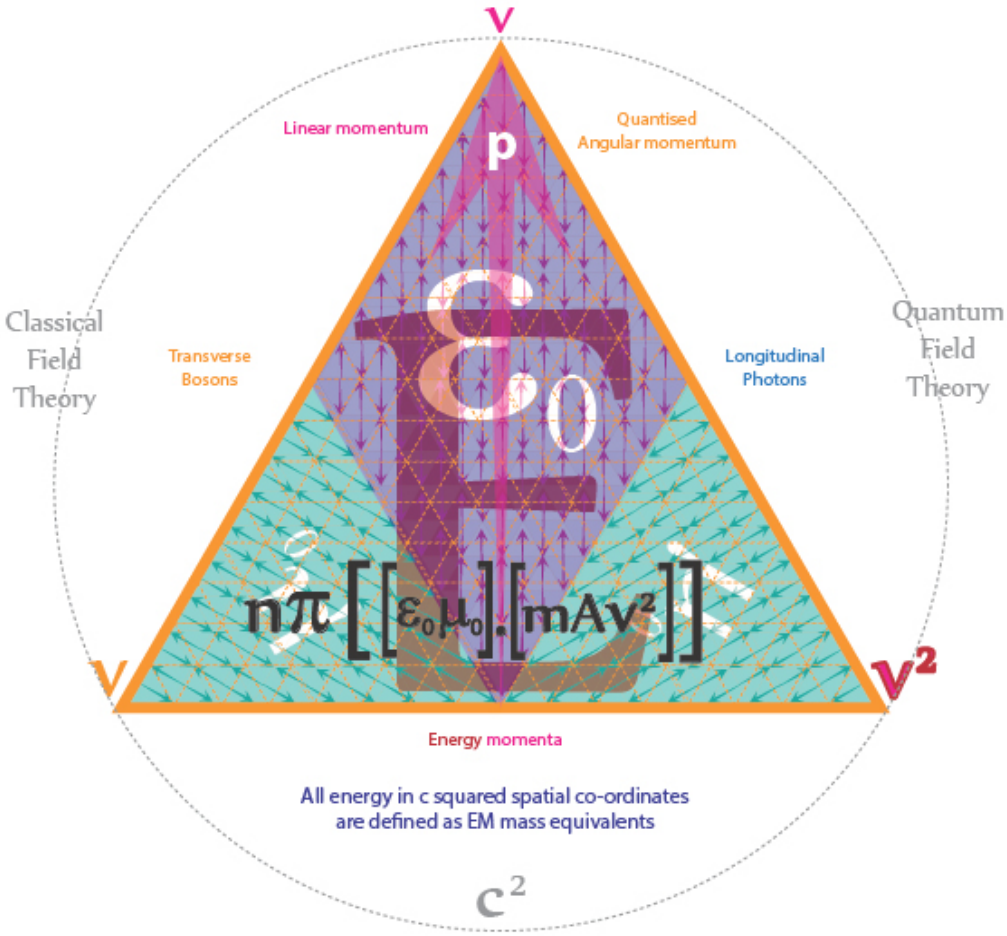
h

$n\pi\,[[\varepsilon_0\mu_0].[mAv^2]]$ (mass; EM Field: ElectroMagnetic; Planck quanta: mass, velocity)

$[mA]$ (mass, QAM)

kg

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



ElectroMagnetic field

$[\varepsilon_0 \mu_0]$ $\quad \frac{s^2}{m^2}$

$\frac{1}{c^2}$

v^2 velocity squared

Opposites attract
Similars repel

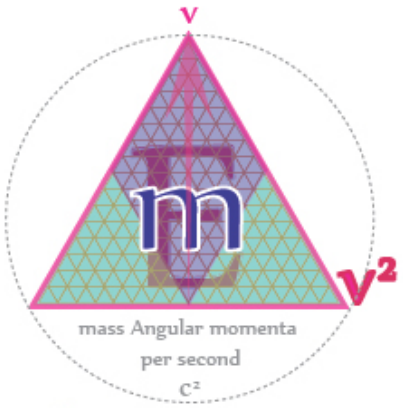
Av^2 QAM quanta/sec

QAM

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

EM mass Relationships

v	Velocity	$\frac{m}{s}$
a	Acceleration	$\frac{m}{s^2}$
p	Momentum	$kg\frac{m}{s}$
F	Force	$kg\frac{m}{s^2}$

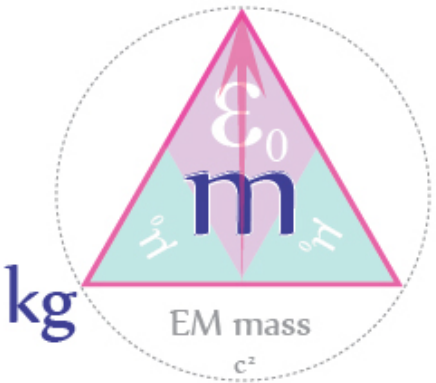


$kg\ \frac{m^2}{s}\ \frac{1}{s}$

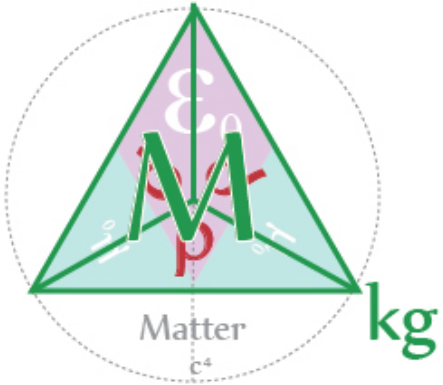
f	Frequency	$\frac{1}{s}$
T	Period	s
A	Current	$\frac{kg}{s}$
C	Charge	$\frac{s}{kg}$

A	Quantum Angular Momentum	$\frac{m^2}{s}$
c^2	Celeritas squared	$\frac{m^2}{s^2}$
h	Planck's Constant	$kg\frac{m^2}{s}$
E	Energy	$kg\frac{m^2}{s^2}$

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



$\frac{\rho}{m^3}$



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

2D EM masses should never be confused with 3D Matter nor should the terms be used in exchange for each other

Matter and relativistic energies

The property of Matter cannot be measured using a c squared spatial co-ordinate system

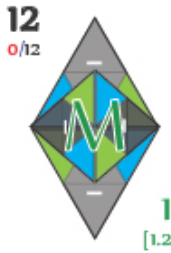
Rest Matter

$$\underset{\text{Fermions}}{12\pi}\left[\left[\varepsilon_0\mu_0\right].\left[mAv^2\right]\right]$$

Rest mass of Matter =
EM mass-Energies with 3D volume

3D Electrostatic particle
No Magnetic Moment

e^-

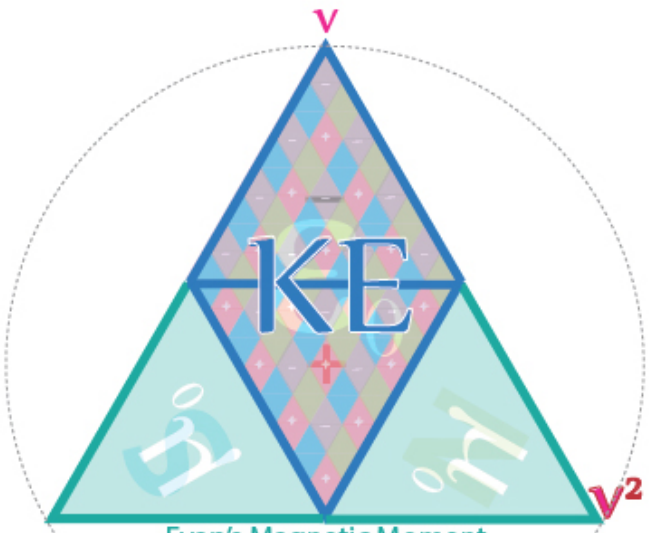


rest mass of a particle is
dependent on its Energy level

All Matter is a Tetryonic
standing-wave charged geometry
occupying a volume in 3D spherical space

$$\left[\frac{T\pi}{c^4}\left[\left[mAv^2\right]_{\text{mass velocity}}^{\text{Planck quanta}}\right] \rightarrow \frac{12\pi}{c^4}\left[\left[mAv^2\right]_{\text{mass velocity}}^{\text{Planck quanta}}\right]\right]$$

rest Matter [4nπ mass-energy] is velocity invariant
(not subject to Lorentz corrections)



Evan's Magnetic Moment

$$\frac{KE + \mu_B}{c^2}$$

A KEM field has Electric and Magnetic quanta
whose total energy quanta is directly related
to the square of the particle's velocity

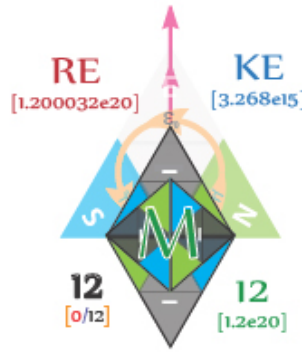
$$4\pi\left[\frac{mAv^2}{c^2}\right]_{\text{mass velocity}}$$

All KEM fields are subject to
Lorentz corrections

Kinetic Energies

$$4\pi\left[\left[\varepsilon_0\mu_0\right].\left[mAv^2\right]\right]$$

Matter-Energy



electron KEM model

Relativistic mass Energy =
rest Matter + Kinetic EM Energies

Electron rest Matter

$$\frac{12\pi}{c^4}\left[\left[mAv^2\right]_{\text{mass velocity}}^{\text{Planck quanta}}\right]$$

$$+$$

KEM wave

$$\frac{4\pi}{c^2}\left[\left[mAv^2\right]_{\text{mass velocity}}^{\text{Planck quanta}}\right]$$

Kinetic Energies

KEM mass-energies are velocity dependent
(subject to Lorentz corrections)

Tetryonic mass & Matter

Historically interchanged due to the lack of proper defintions
the specific identities of EM mass & Matter can now be firmly defined
with respect to their energy equivalence and spatial geometries

m

mass is a measure of the 2D planar
energy content of any physical system

$$\frac{n\pi}{c^2}[[mAv^2]]$$

mass · Planck quanta · mass · velocity

2D
radiant equilateral geometry
of EM mass-ENERGY momenta
EM mass

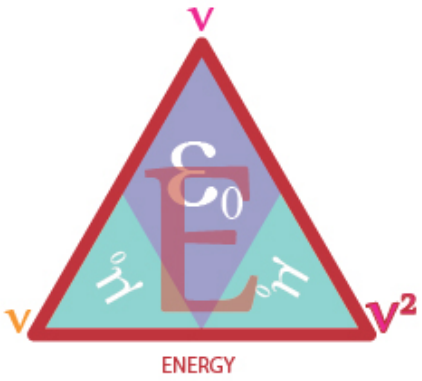
M

Matter is a measure of the 3D volumetric
energy content of any physical system

$$\frac{T\pi}{c^4}[[mAv^2]]$$

Matter · Planck quanta · mass · velocity

3D
tetrahedral standingwave geometry
of EM mass-ENERGY momenta
rest Matter

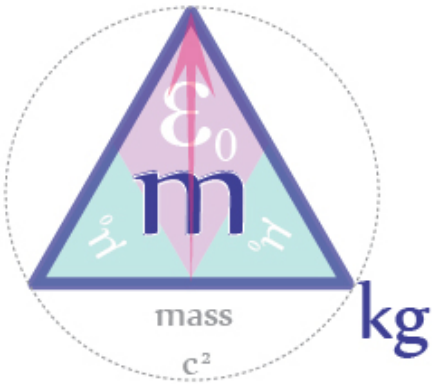


EM mass should replace the generic term mass with reference to ElectroMagnetic Energy density

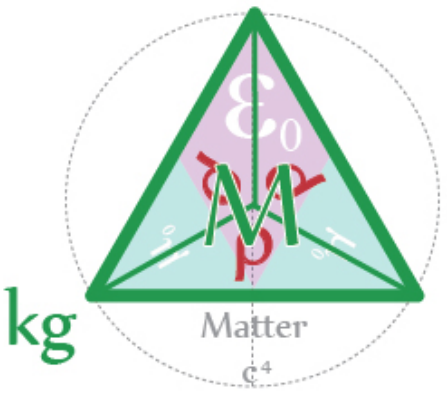
Stationary MATTER is a 4π standing wave geometry of EM mass-Energies

The EM masses [Energy density] comprising Matter is never 'at rest' as the electromagnetic energies creating Matter geometries always propagate at c

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



$$\frac{\rho}{m^3}$$



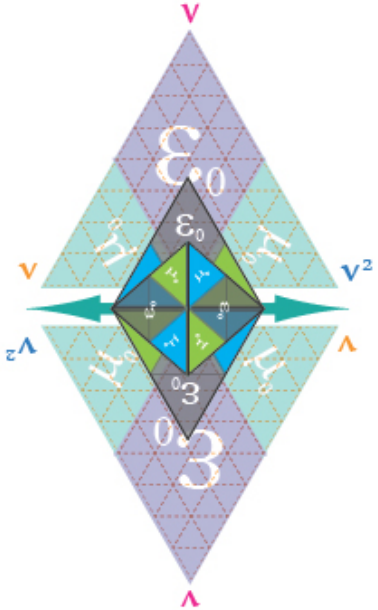
Electronic Kinetic Energies

The motion of Leptons
within Atomic Nuclei produces
Magnetic moments at various orientations
to the Nuclear Magneton

SPIN UP

The EM Energy [mass] content of
Baryons directly influence the KEM
energy levels of bound Leptons

Changes in the quantised angular
momentum of bound Leptons



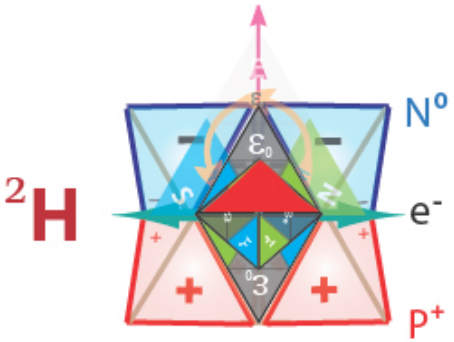
prouduces spectral lines of varying frequencies

EM mass-Energy-momenta and Spin
are always conserved

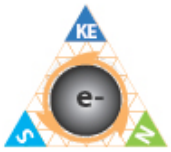
SPIN DOWN

If a Electron is 'ejected' from the
Nuclei it will obey conservation of
EM mass-Energy momentum

Ie its ejected Energy-momentum equals
the absorbed particle/s Energy-momenta



UP
spin

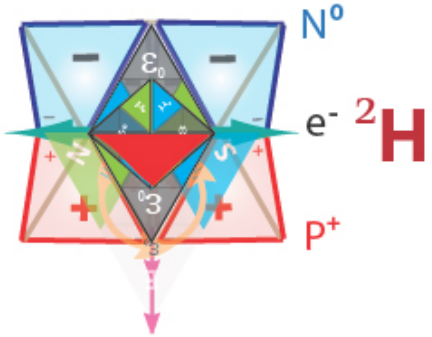


Parallel
Magnetic Moments

Nuclear magneton

DOWN
spin

Antiparallel
Magnetic moments



Leptronic Motion

Stationary leptons have Neutralised Magnetic dipoles (Electrostatic field)

EM Energy released through Nuclear level transitions is released as Photons

$$12\pi \left[\left[mAv^2 \right] \right]$$

negative

Leptons

Energy

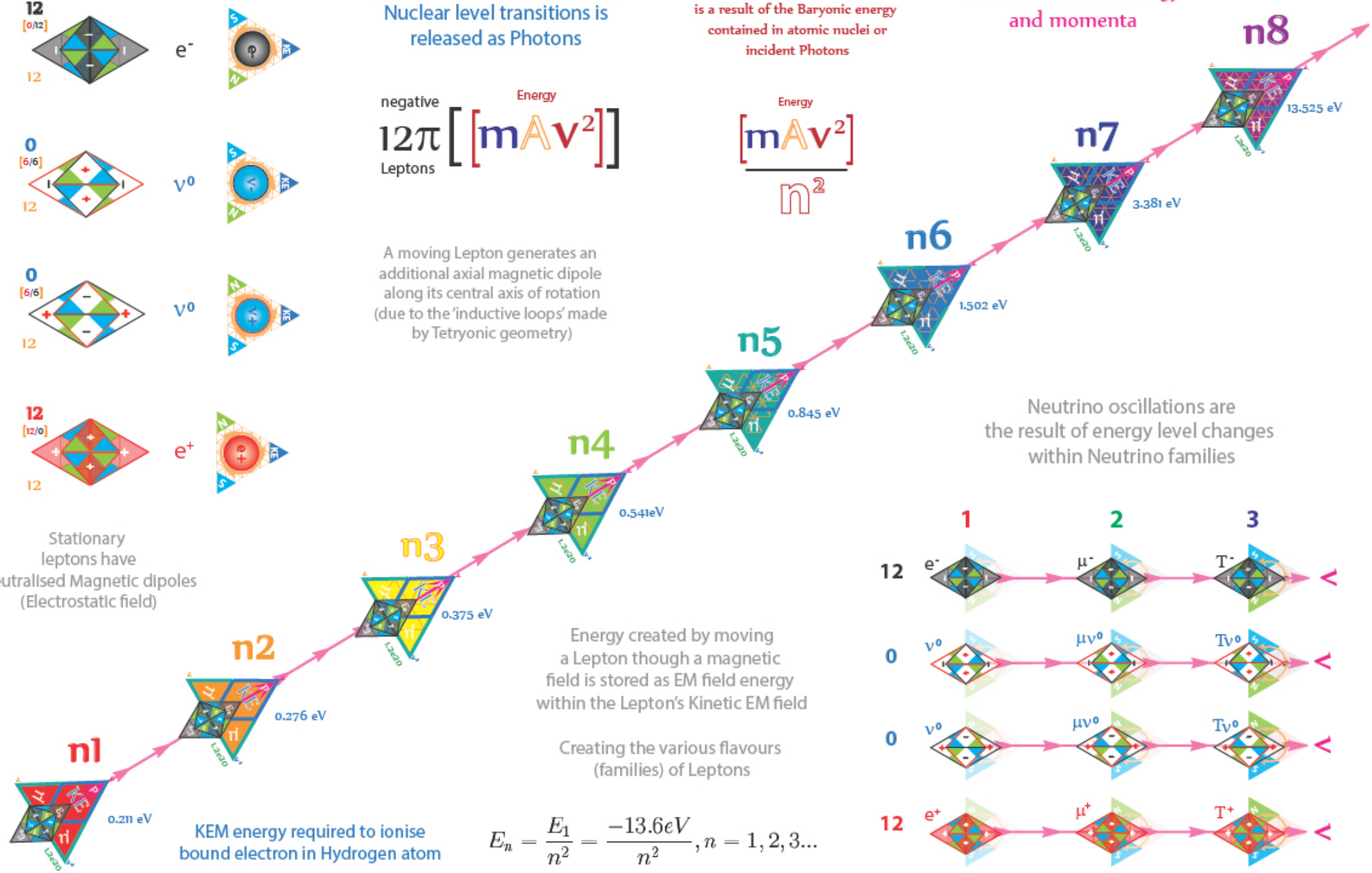
A moving Lepton generates an additional axial magnetic dipole along its central axis of rotation (due to the 'inductive loops' made by Tetryonic geometry)

A Lepton's quantum energy level is a result of the Baryonic energy contained in atomic nuclei or incident Photons

$$\frac{\left[mAv^2 \right]}{n^2}$$

Energy

KEM fields have Energy and momenta



KEM energy required to ionise bound electron in Hydrogen atom

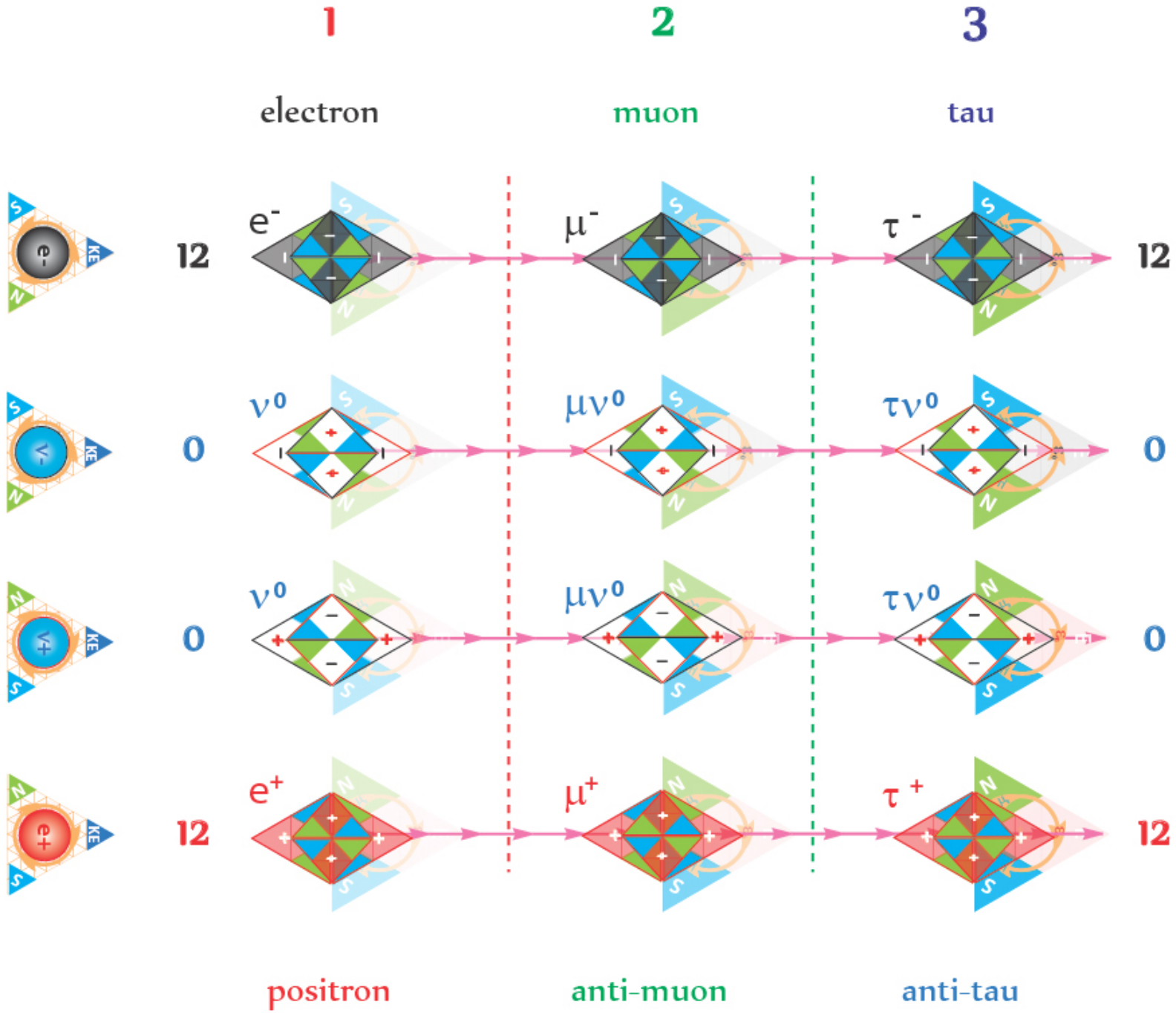
$$E_n = \frac{E_1}{n^2} = \frac{-13.6eV}{n^2}, n = 1, 2, 3...$$

Energy created by moving a Lepton though a magnetic field is stored as EM field energy within the Lepton's Kinetic EM field

Creating the various flavours (families) of Leptons

Neutrino oscillations are the result of energy level changes within Neutrino families

Leptronic Oscillations



$$12\pi\left[\left[\varepsilon_0\mu_0\right].\left[mAv^2\right]\right]$$

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

All Leptronic generations, oscillations and types can be accounted for through Tetryonic energy levels and geometry

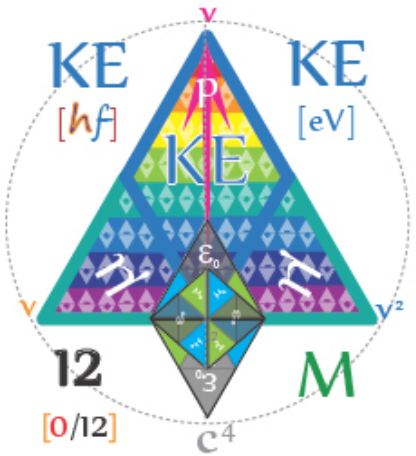
Principal Quantum levels

(Eigenstate bound energy states)

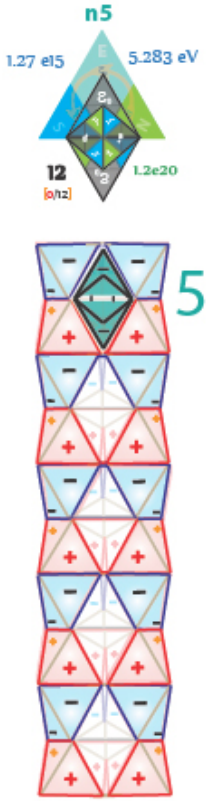
In order to ionise any photo-electron from its bound position within a Hydrogen atom the KEM field energy of the electron must be increased from its Eigenstate value to more than 13.525ev

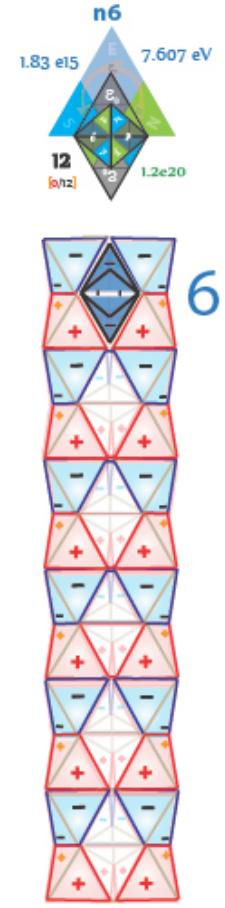
$$Mv^2 = KEM = hf$$

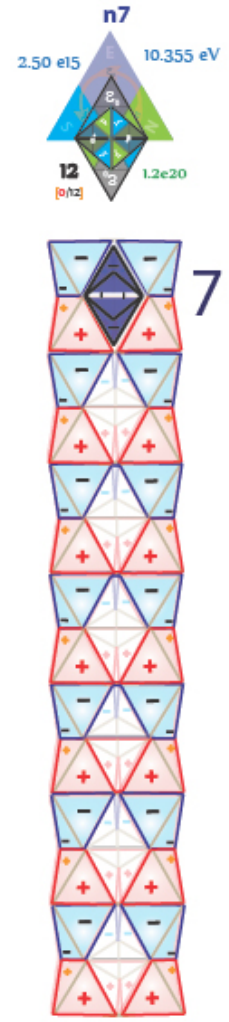
Bound electron Eigenstate values

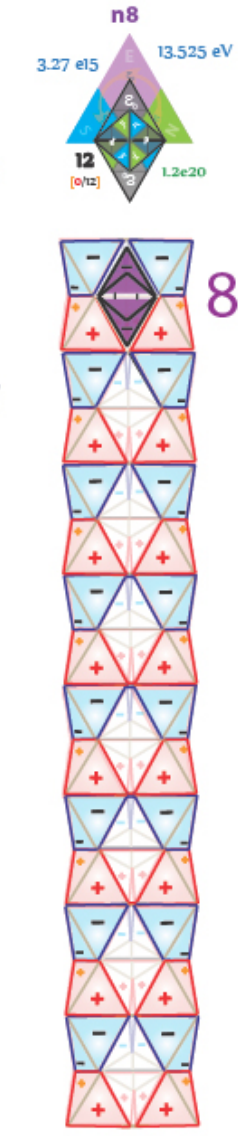


rest Matter



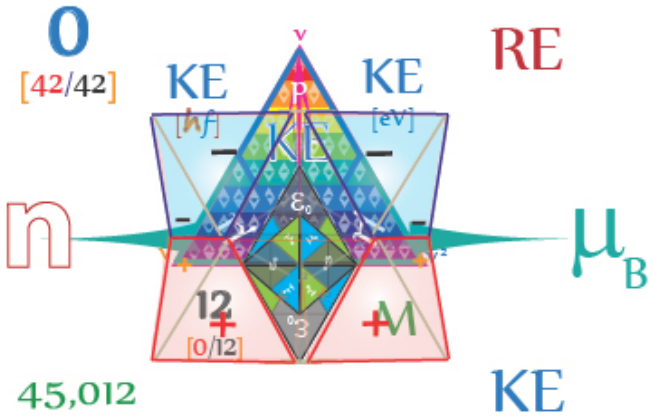






The Energy content of Baryons comprising atomic nuclei directly determine the Kinetic energy levels of bound Leptons [quantum synchronous convertors]
(incident Photons can increase these levels if they contain the exact quanta required to increase the level to the next square number)

Bohr radius

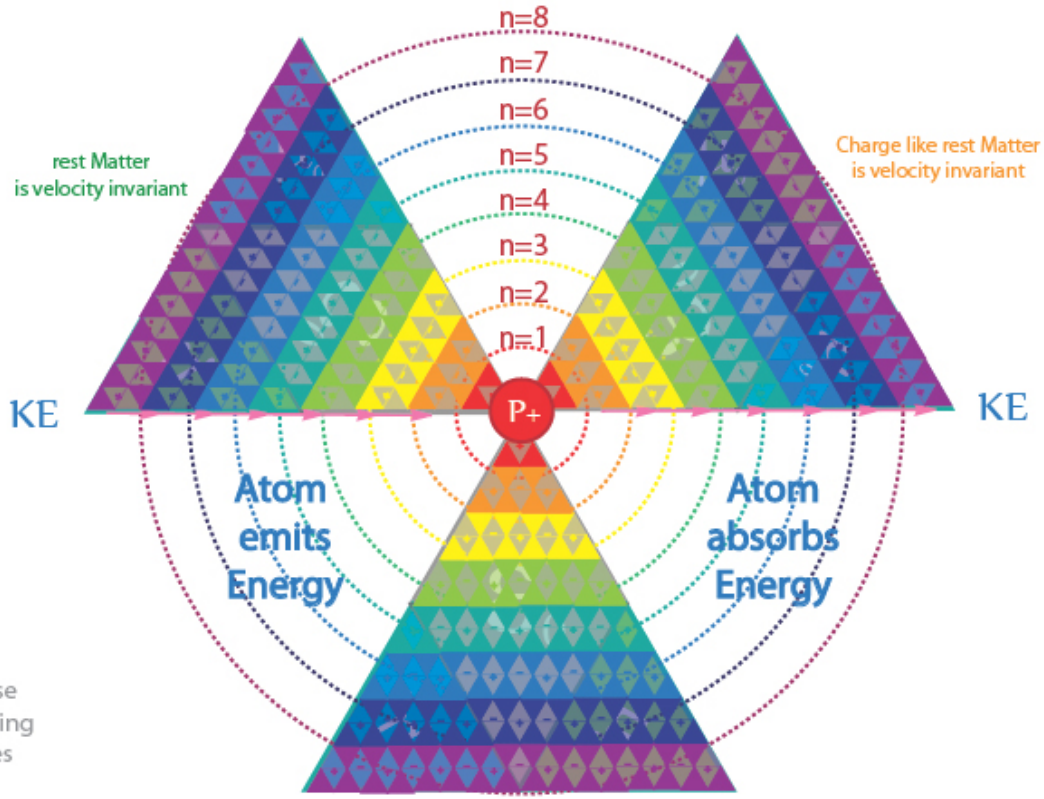


As the Electron's velocity increases
the measureable magnetic moment
strength increases and
the Planck wavelength decreases
(due to increased Planck EM quanta).

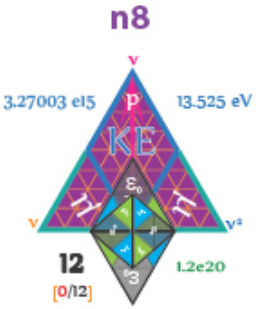
The KEM field has a c^2 geometry while the
Electron geometry is $1/c^2$ geometry
and its quanta remains invariant

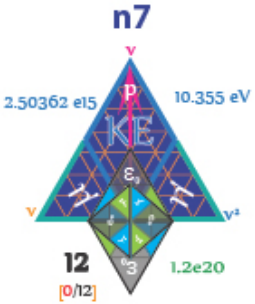
All massive particles asbsorb and release
energy in discrete Quantum steps according
to their respective Tetryonic geometries
and changes in velocities

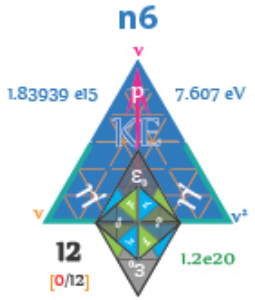
The highest level quantum number
produces the strongest
Magnetic Moment



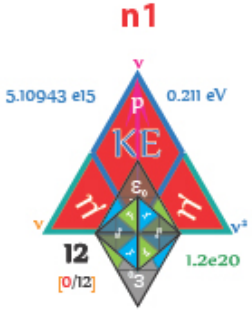
Model is for illustrative purposes only -
actual quanta illustrated are stored
in radial KEM fields

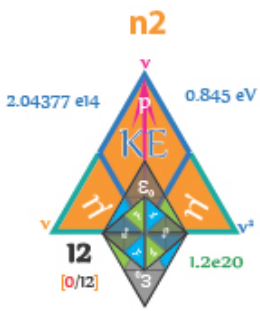


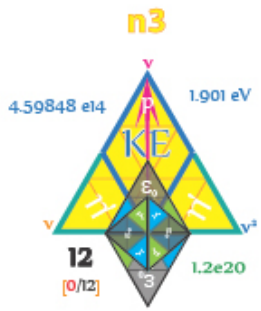


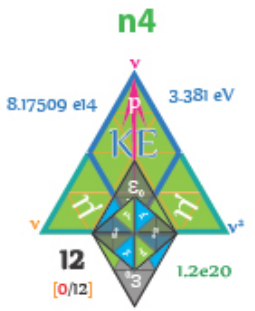


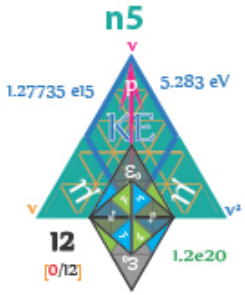
Kinetic
Energies











Baryons

are tri-Quark geometries

$$36\pi\left[\left[\varepsilon_0\mu_0\right].\left[mAv^2\right]\right]$$

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

Nuclear Magnetons

are weaker than Bohr magnetons
due to differing mass-Charge ratios
and non-parallel Quark magnetons

Tetryonic Charge

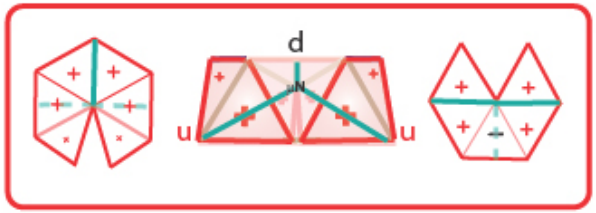
Proton

P^+

μ_d μ_u μ_u

Tetryonic Charge: **12** [24/12] 36

Nuclear magneton: N P KE S



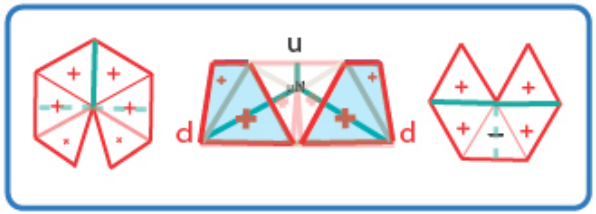
anti-Neutron

N^o

μ_u μ_d μ_d

Tetryonic Charge: **0** [18/18] 36

Nuclear magneton: N Z KE S



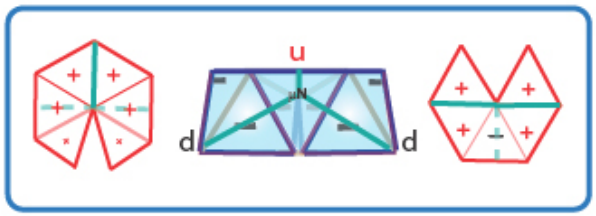
Neutron

N^o

μ_d μ_d μ_u

Tetryonic Charge: **0** [18/18] 36

Nuclear magneton: S Z KE N



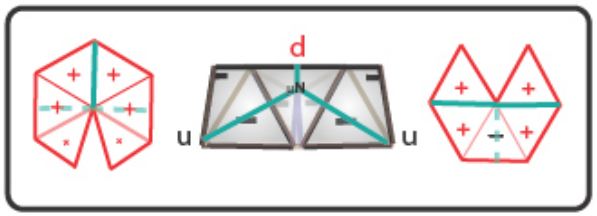
anti-Proton

P^-

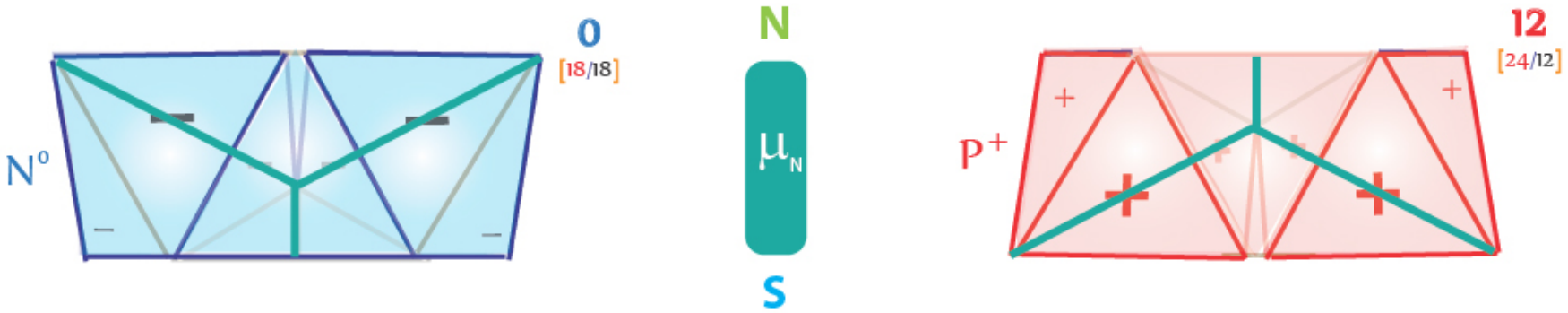
μ_u μ_u μ_d

Tetryonic Charge: **12** [12/24] 36

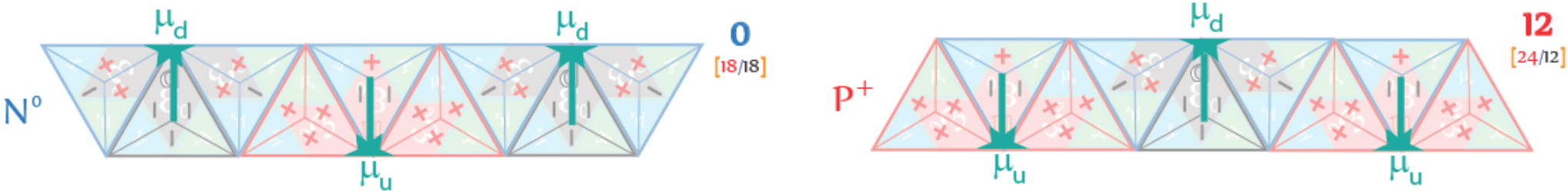
Nuclear magneton: S P KE N



Baryonic Magnetic Moments



A Baryon's Magnetic Moment is a result of the combined non-parallel Magnetic moments of its Quarks

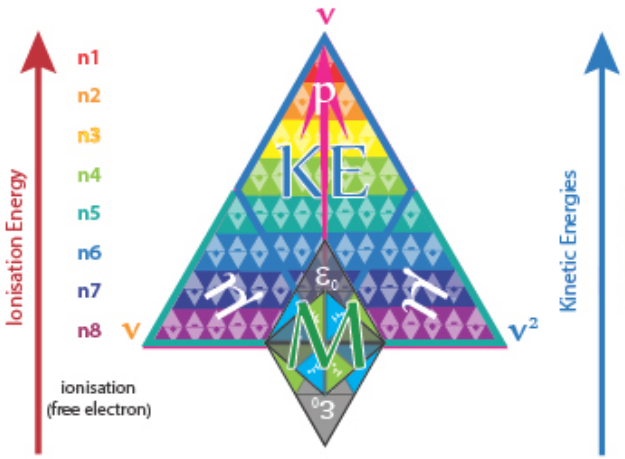


As a result of the 3 non-aligned Quark magnetic moments
resulting from their Tetryonic geometry,
the Nuclear Magneton is considerably weaker than the Bohr Magneton

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 geometry of Lepton's and the square rule of Energy

Photonic energy required to ionise electron

-13.389 eV
0.211 eV
5.10 e13
n1
0 eV
rest Matter

-12.755 eV
0.845 eV
2.04 e14
n2

-11.699 eV
1.901 eV
4.59 e14
n3

-10.219 eV
3.381 eV
8.17 e14
n4

-8.317 eV
5.283 eV
1.27 e15
n5

-5.993 eV
7.607 eV
1.83 15
n6

-3.245 eV
10.355 eV
2.50 e15
n7

-0.075 eV
13.525 eV
3.27 e15
n8

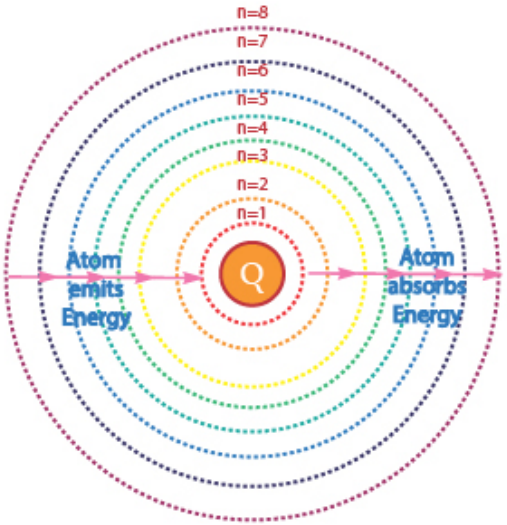
Principal Quantum numbers reflect an electron's energy level

Energy may be absorbed or released from any Lepton in Quantum steps reflecting the energy difference between the electron 'orbitals'

Eigenstate energy levels

$$E_n = \frac{E_1}{n^2} = \frac{-13.6eV}{n^2}, n = 1, 2, 3...$$

Any Electron that has in excess of 13.6 eV of Kinetic Energy escapes the Nucleus



$$\frac{1}{\lambda} = \frac{R_H}{hc}\left(\frac{1}{n_1^2} - \frac{1}{n_2^2}\right)$$

Transitions between electron energy levels is the basis for emission and aborbsion spectra

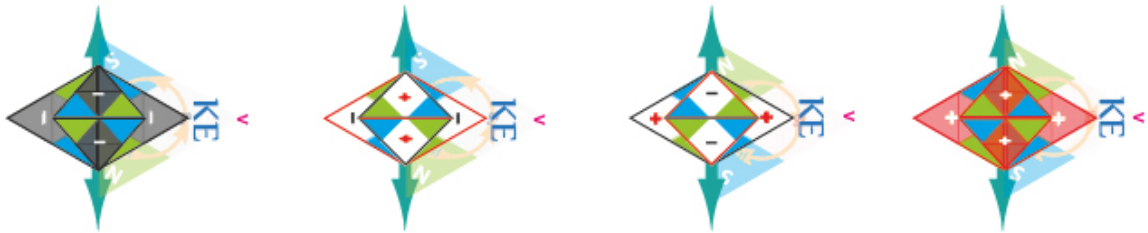
Quantum Spin Numbers

(rotations about an axis)

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

720^0 Spin 1/2

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)

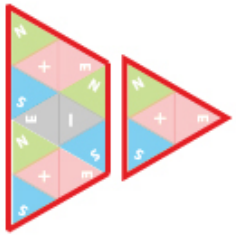
any^0 Spin 0

A spin-zero particle can only have a single
quantum state, even after torque is applied.

360^0 Spin 1

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)



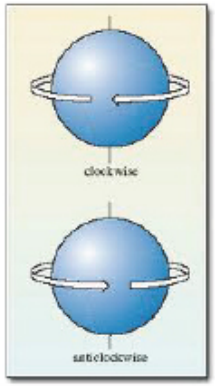
180^0 Spin 2

Rotating a spin-2 particle 180 degrees
can bring it back to the same quantum state

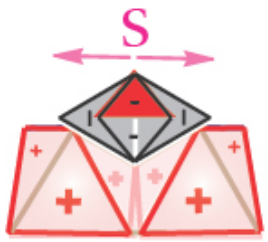
120^0 Spin 3

Rotating a spin-3 particle 120 degrees
can bring it back to the same quantum state

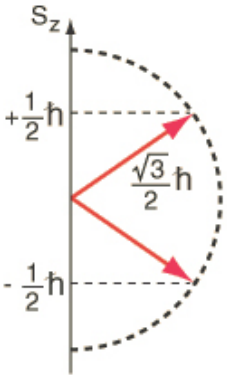
On a geometric basis all Leptons are in fact spin 3 particles



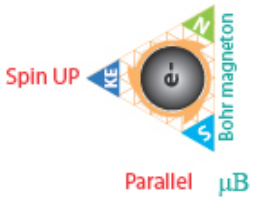
$$\mu_B = \left[\frac{Q}{2mv}\right]/\ell$$

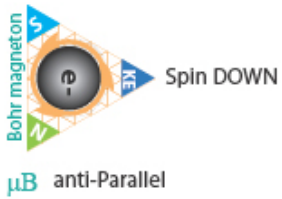


$$\mu_B = g\left[\frac{e-}{2mv}\right]S$$



Long dismissed as not being a result of
quantum mechanical rotation about an axis
ELECTRON SPIN is revealed to be exactly that





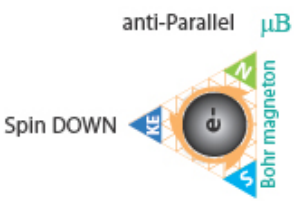
720°
Spin 1/2

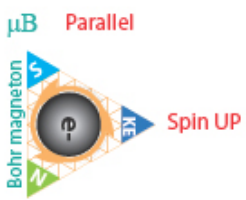
Rotating a spin-1/2 particle by 360 degrees
does not bring it back to the same quantum
state it needs a 720 degree rotation

Reversing the Nuclear magneton
results in reversed electron spins

120°
Spin 3

Rotating a spin-3 particle 120 degrees
can bring it back to the same quantum state





Tetryonic
KEM field geometries
reveals the source and orientation
of all atomic magnetic moments

All atomic particles have a particular "spin,"
analogous to the earth's rotation on its axis.
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.

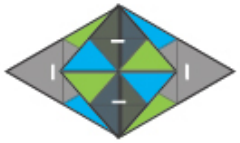
The quantum mechanical reality underlying spin
is complex and still poorly understood
Consequently, there is no reason to expect the above classical relation to hold.

The results are
complicated by the
non-aligned Quark magnetons
comprising all Baryonic Matter

Generating Magnetons

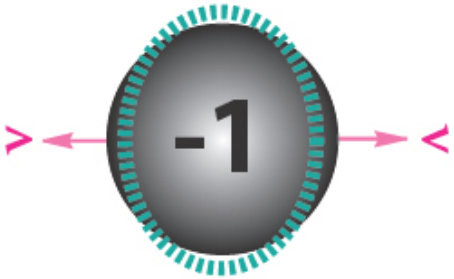
Tetryonic geometry fully explains Leptronic 'spins'

A static Electron has a Negative Tetryonic charge [0/12] geometry with neutralised magnetic dipoles



Leptons are 12 loop inductive rotors

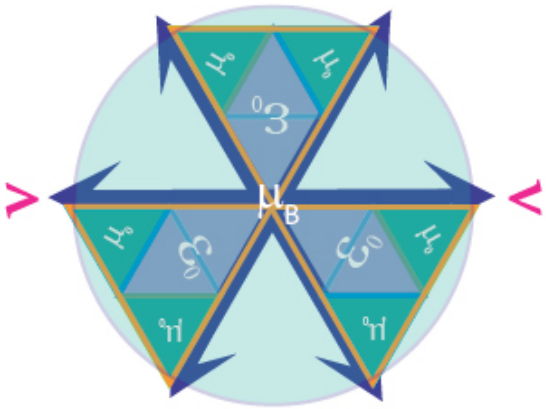
The Einsteinian Relativistic model of moving charges is incorrect



μB

BOHR Magneton produced by Lorentzian distortion of charges due to relativitistic velocities

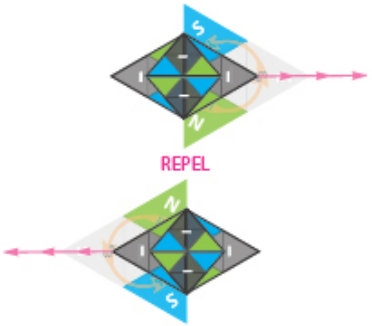
$$\mu_B = \frac{e\hbar}{2m_e}$$



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, Baryonic and Elemental 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

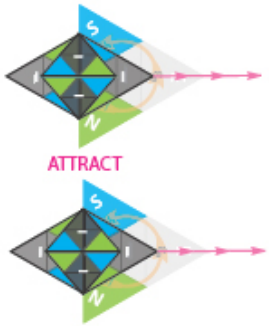
Ampere's Law



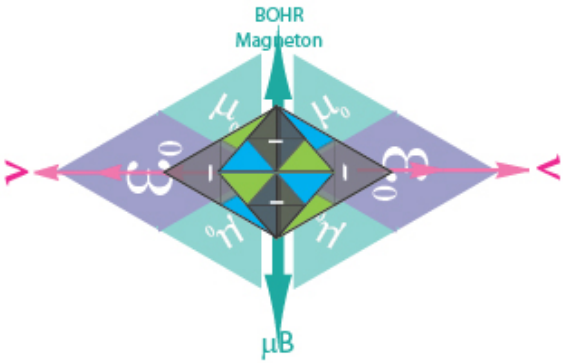
$$\mathbf{B} = \frac{\mu_0 I}{4\pi} \int \frac{d\boldsymbol{\ell} \times \hat{\mathbf{r}}}{r^2},$$

$$F = 2k_A \frac{I_1 I_2}{r}$$

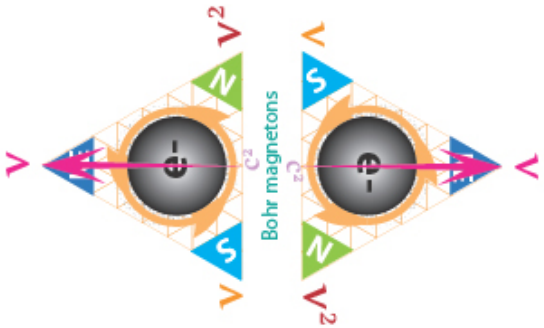
$$\mathbf{F} = q[\mathbf{E} + (\mathbf{v} \times \mathbf{B})].$$



A moving Electron has a KEM field with an Electric field and a Magnetic Moment



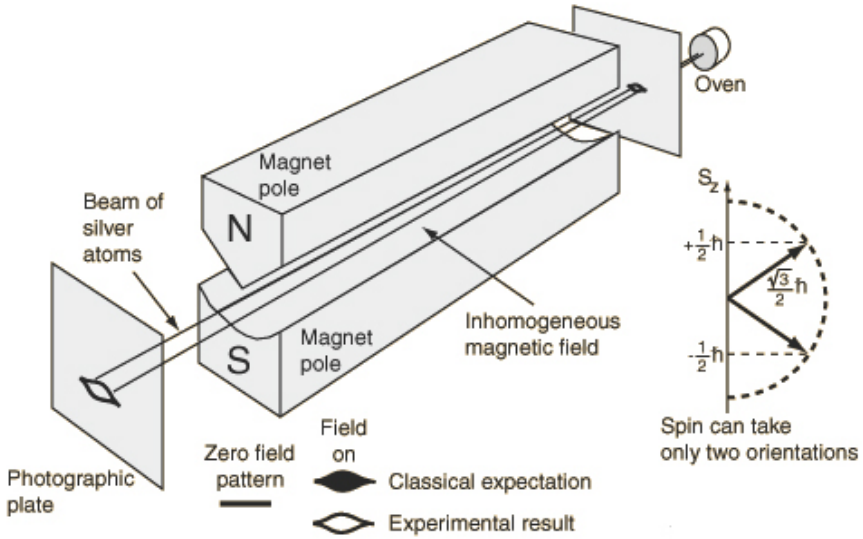
The gyromagnetic ratio of a particle or system is the ratio of its magnetic dipole moment to its angular momentum



The Energy of a KEM field of an Electron in motion is subject to relativistic corrections due to energy changes resulting from its acceleration

$$L = L'\sqrt{1 - \frac{v^2}{c^2}}$$

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

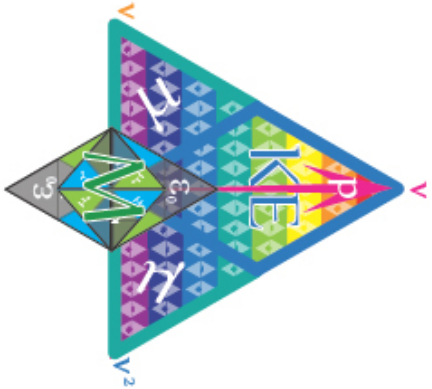
The Stern-Gerlach experiment to determine electron SPIN

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 rotation of their intrinsic quantum inductive loop geometries.

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 Energy results in a increase in quantised angular momentum and linear momentum

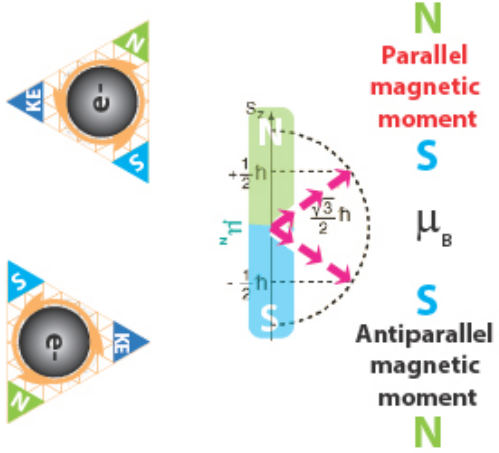


Any change in the energy level of an electron results in Photon emission or absorption

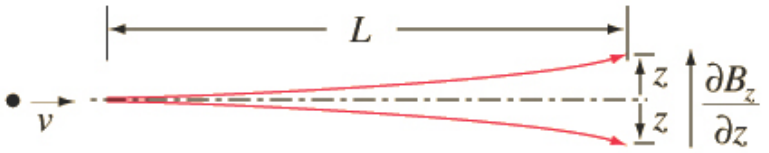
Electron Spins based on the measured Bohr Magnetons of moving electrons are reflective of KEM field geometries

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



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 direction of electron SPIN is measured against either the Nuclear Magneton or external magnetic fields

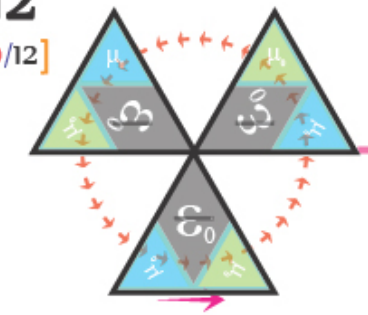
Bohr Magnetons

A moving electron is
a 12 loop rotating inductor

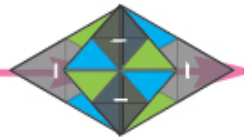
Energy created by moving a Lepton though an external EM field is stored as Planck quanta within the Lepton's extended KEM field

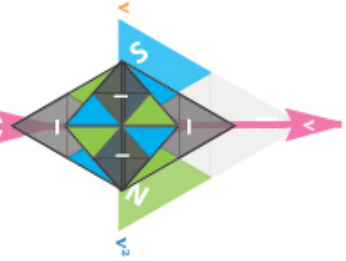
Leptronic 'spin' is always determined by the Leptronic Magnetic moment as referenced against the Nuclear Magnetic Moment

12
[0/12]



Electro-static particles have neutralised Magnetic Moments





Velocity
creates
Kinetic Energy
and
Magnetic Moments

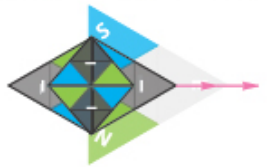
A moving Lepton creates a secondary stronger intrinsic magnetic dipole moment which interacts with external magnetic fields

Reversing the direction of Leptronic motion creates reversed dipole Leptronic Magnetic Moments

Bohr Magneton

Parallel Magnetic Moments

Anti-Parallel Magnetic Moments

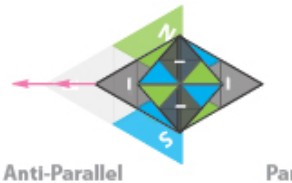


Spin UP

Spin DOWN

Spin DOWN

Spin UP

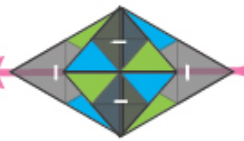


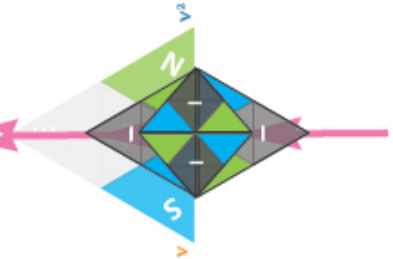
Anti-Parallel Magnetic Moments

Parallel Magnetic Moments

Bohr Magneton

12
[0/12]





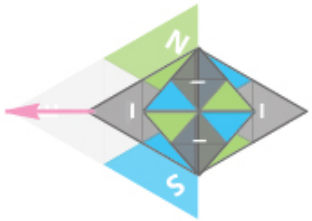
Left handed and right handed fermions are mirror images of each other

All Leptronic macro-KEM fields and interactions with external fields can be modelled using ZPF/EM geometries

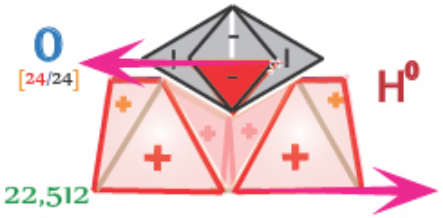
Leptons are not
point particles

These Spin directions are reversed for Opposite charges

Electron Spin orientation



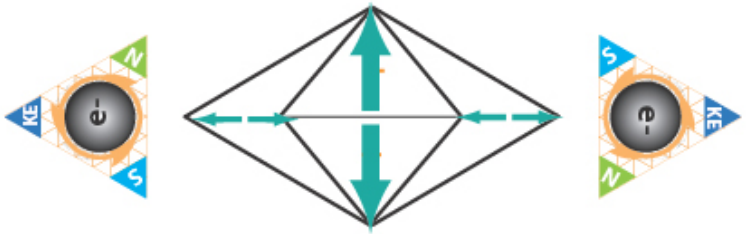
Spin UP



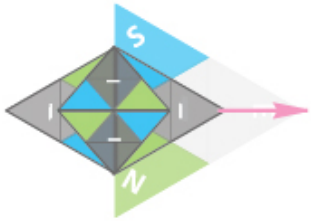
Higher energy

Parallel spin

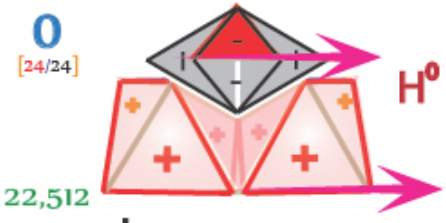
The Bohr magneton dipole
produced by Kinetic Energies
is located axially about the
centre of rotation



All Leptons have 12 intrinsic dipole moments
which in turn produce Spin (rotational angular momentum)
and a polarised Leptonic Magnetic moment

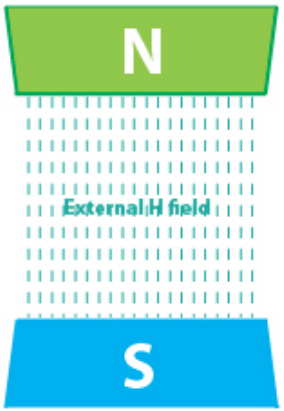


Spin DOWN

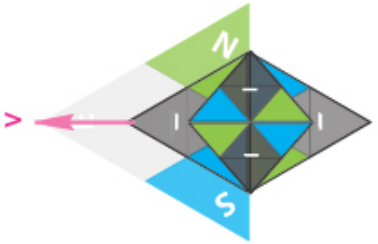


Lower energy

Anti-parallel spin



Spin UP



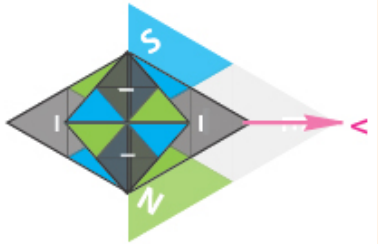
Magnetic field is Parallel to
Nuclear Magnetic moment
or external Magentic H field

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]

Electrons are composed entirely of Negative quanta which have 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 moving Leptons produce Kinetic Energy in turn creating Magnetic Moments

Electron

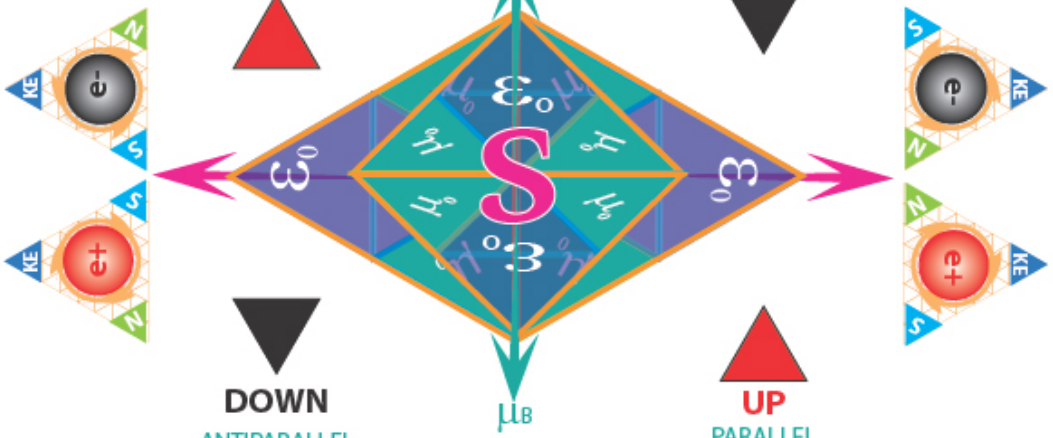
PARALLEL
Magnetic moments

BOHR
Magneton

ANTIPARALLEL
Magnetic moments

UP

DOWN

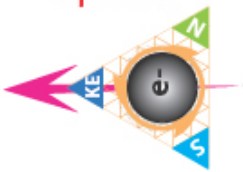


DOWN
ANTIPARALLEL
Magnetic moments

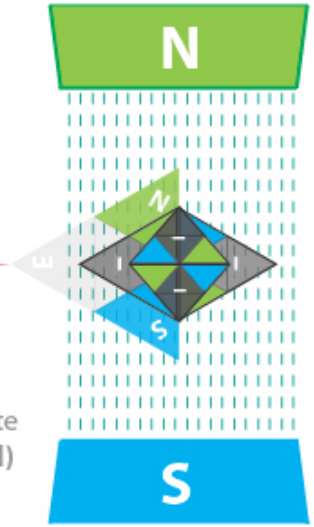
UP
PARALLEL
Magnetic moments

Positron

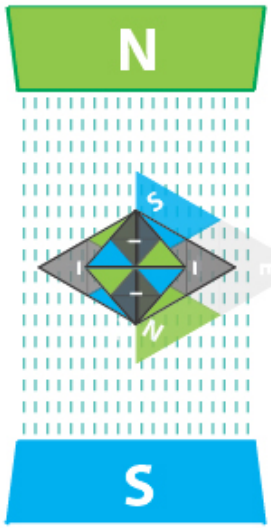
Spin UP



Spin UP
is a higher energy state
resulting in a **(Parallel)**
Bohr Magneton



Nuclear magneton or external Magnetic field



Spin DOWN
is a lower energy state
resulting in a **(Antiparallel)**
Bohr Magneton

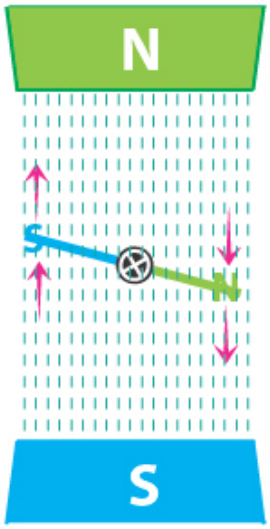
Spin DOWN

Lorentz Force

When moving in an external magnetic field

The axial dipole moment of an electron will experience torque force proportional to its velocity

Opposites attract
Similars repel



Nuclear magnetic Moment

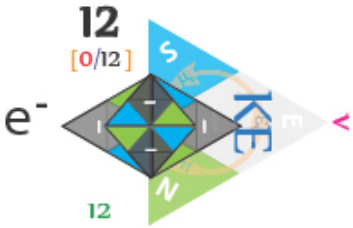
[Nuclear magneton]

Like Leptons all Baryons can be modelled with ZPFs

The nuclear spins for individual protons and neutrons parallels the treatment of electron spin, with spin 1/2 and an associated magnetic moment.

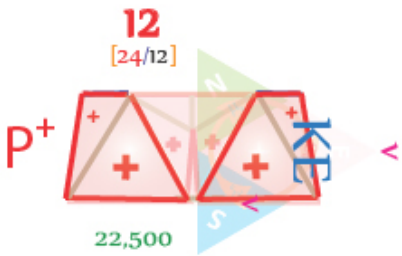
The magnetic moment is much smaller than that of the electron.

For the combination of neutrons and protons in nuclei, the situation is more complicated.



BOHR magneton is much larger than Nuclear magneton due to higher Charge to Mass ratio

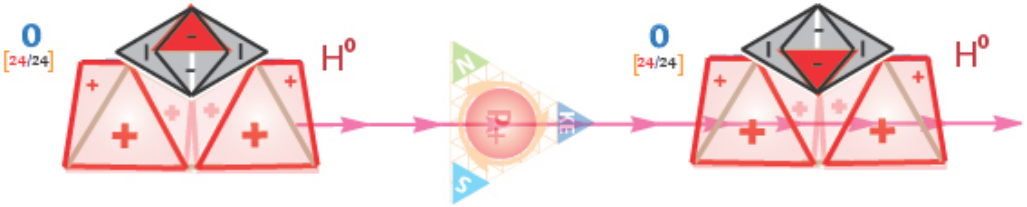
$$\frac{M_P}{M_e} = 1875$$



Additionally, the Magnetic vertices of Baryons are not aligned in a central axis as it is in Leptons

Spin UP
Parallel Magnetons

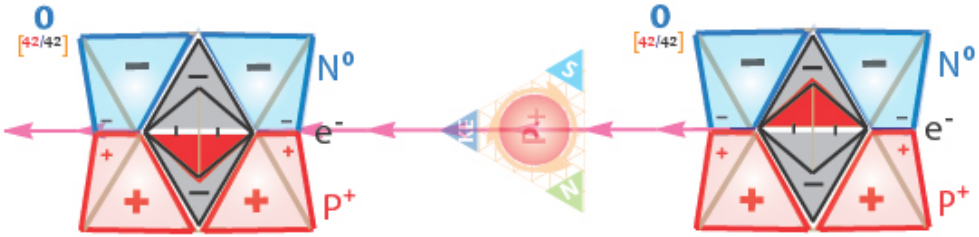
Spin DOWN
Antiparallel Magnetons



Bohr Magnetons

Nuclear Magnetons

Bohr Magnetons



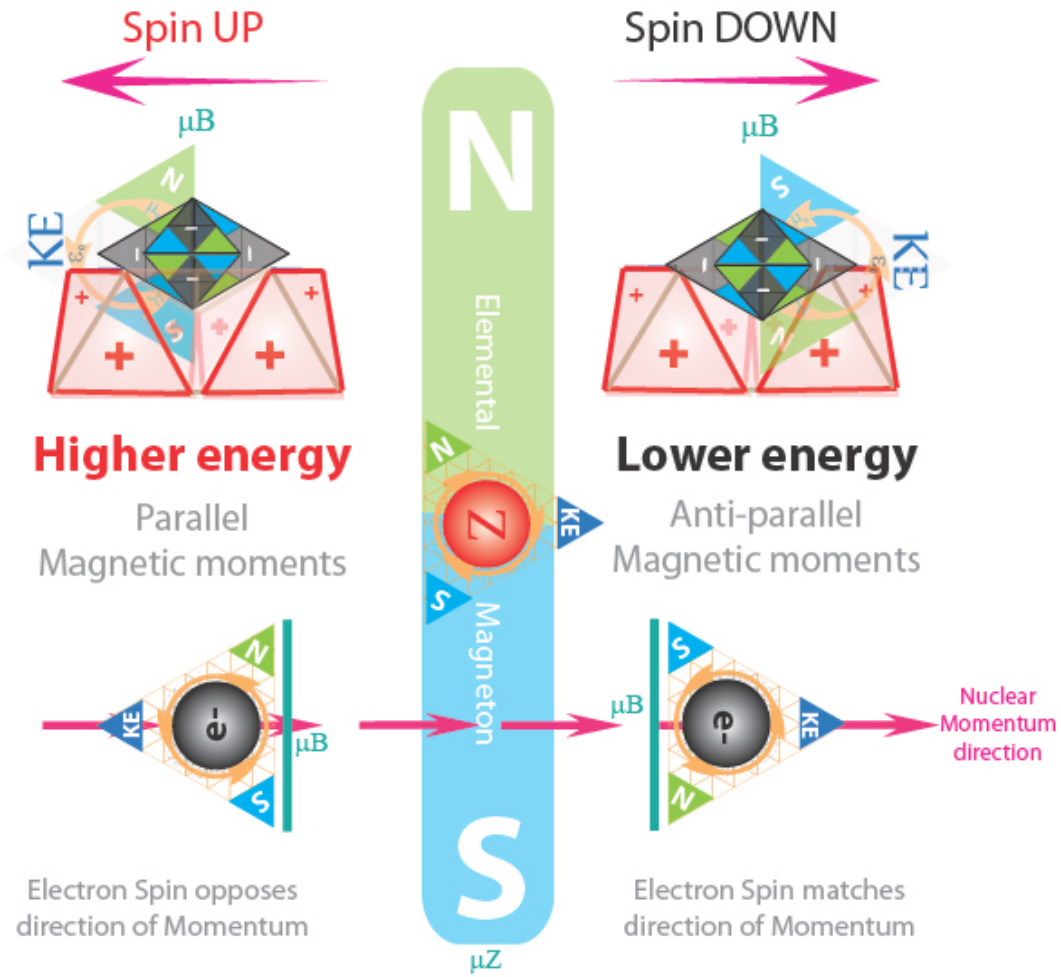
Antiparallel Magnetons
Spin DOWN

Direction of total nuclei momentum

Parallel Magnetons
Spin UP

Spin orbital coupling mechanics

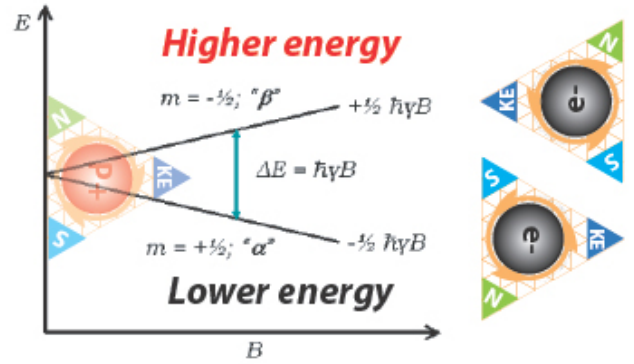
The induced magnetic moment of electrons
in atomic nuclei is either parallel or anti-parallel
to the magnetic moment of the nuclei



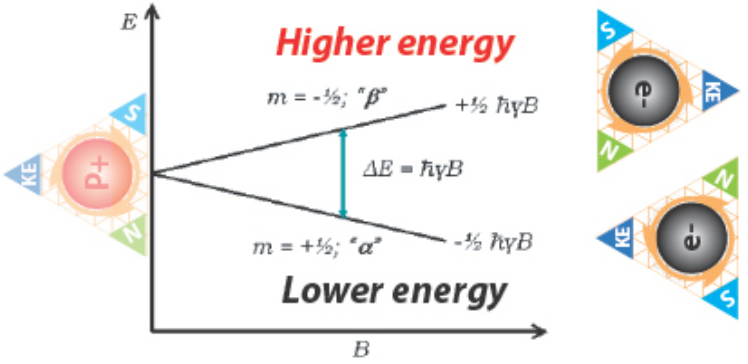
Particle EM field orientation and interaction
can be modelled using ZPFs

Nuclear and Bohr Magnetons

The induced magnetic moments
combine vectorally creating
a total nuclear magnetic moment



The energy level differences created
are manifested in Hyperfine-line splitting
Zeeman effects etc.



The Direction of electron spin with repsect to the direction of Nucleon spin determines the energy level of emitted photons

The alignment of electrons in Matter
results in diamagnetic, para-magnetic materials

Gyromagnetic ratio

The ratio of its magnetic dipole moment to its angular momentum

Its SI units are radian per second per tesla (s-1·T -1) or, equivalently, coulomb per kilogram (C·kg-1)

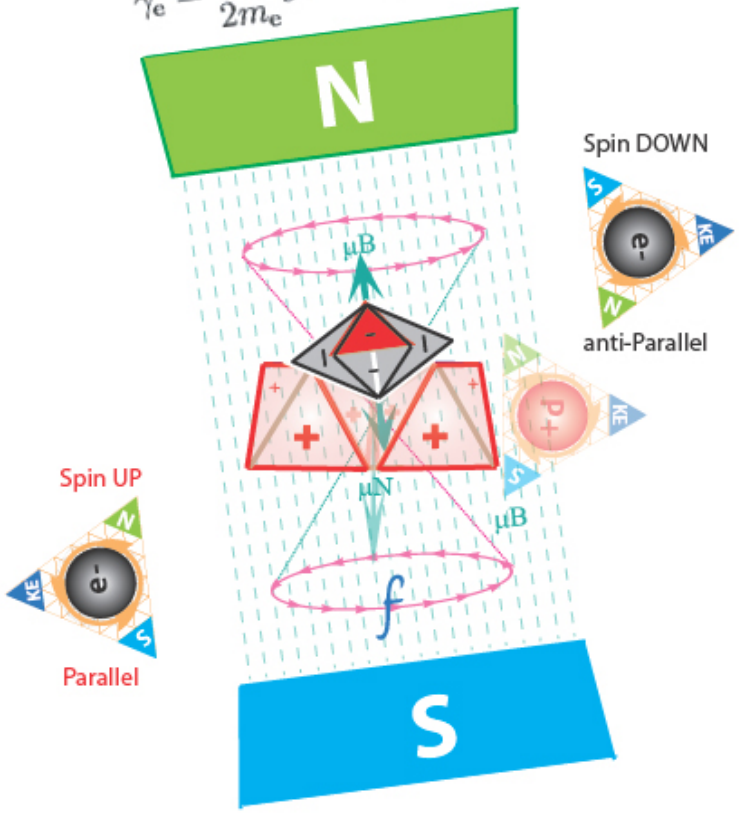
$$\gamma_e = \frac{-e}{2m_e} g_e = -g_e \mu_B / \hbar,$$

$$\mu s = gs\ \mu B\ ms$$

μs is called the spin magnetic moment,
gs is the spin gyromagnetic ratio,
μB is the Bohr magneton and
ms is 1/2 or -1/2 (the spin of the electron divided by h)

= 9.274 * 10-24 Am2

$$f = \frac{\gamma}{2\pi} B$$

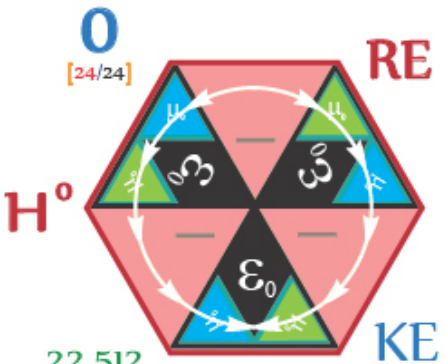


Lamor Precession

Any free system with a constant gyromagnetic ratio,
such as a rigid system of charges, a nucleus, or an electron,
when placed in an external magnetic field B (measured in teslas)
that is not aligned with its magnetic moment, will precess
at a frequency f (measured in hertz), that is proportional to the external field

$$\gamma = \frac{e}{2m_p} g = g\mu_N / \hbar,$$

Neutral Hydrogen



$$\gamma = \frac{e}{2m_p} g = g\mu_N / \hbar,$$

Gyromagnetic ratio for a nucleus

g = 2.00231930386

In Hydrogenic atoms electrons can reside either on the top or the bottom of the Proton,
in turn their geometries allow for precession with respect to the Nuclear magneton

$$\gamma_e = -1.760\,859\,770(44) \times 10^{11}\,\mathrm{rad\ s^{-1}T^{-1}}.$$

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

1 electron 12π

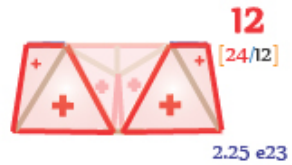
The Bohr Magneton is determined by the Tetryonic geometry of Leptons.

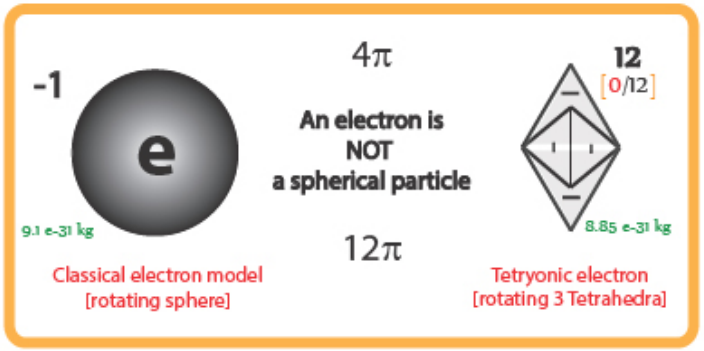
mass-Matter differential

The combined Kinetic energy of Motion [KEM field] and Electron Spin coupling with Nuclear Magnetons will effect any measured Gyromangetic ratios

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.

1875 Proton 36π





An isolated electron has an angular momentum and a magnetic moment resulting from its spin.

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.

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

$1.810820762 \times 10^{11}$

The 2006 CODATA
– e / me = -1.758 820 150(44) x 10[11]

Nuclear Magnetons

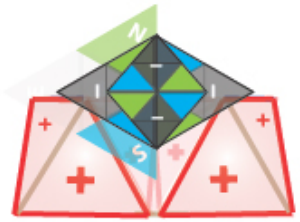
e- Tetryonic elementary charge 1.602845742 e-19 coulombs / Tetryonic electron mass 8.851486051 e-31 = em

12q 1.2e20

[q/m]

181,082,076,200 C/kg

Spin UP K.E. ← Electron Spin [Orbital Angular Momentum] → Spin DOWN K.E.



Lower energy

N Nuclear Magneton S

Higher energy

12q 2.25e23

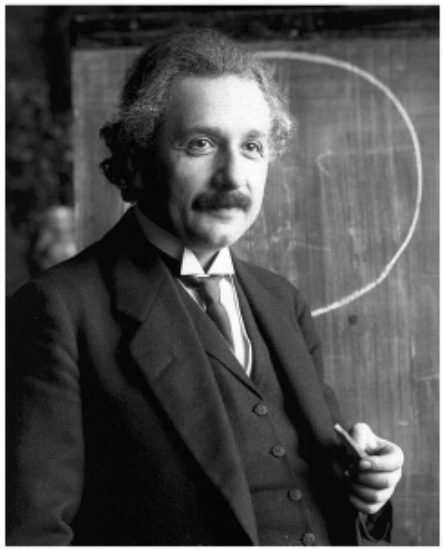
Tetryonic elementary charge 1.602845742 e-19 coulombs / Tetryonic Proton mass 1.6596536351 e-27 = pm e+

[q/m]

96,577,107 C/kg

Illuminating the Quantum realm

Albert Einstein



(14 March 1879 – 18 April 1955)

$$m$$

$$\frac{n\pi}{c^2}[[mAv^2]]$$

mass Planck quanta

mass velocity

Increasing Energy levels
is NOT the answer to revealing
the subtle secrets of the quantum world

$$M$$

$$\frac{T\pi}{c^4}[[mAv^2]]$$

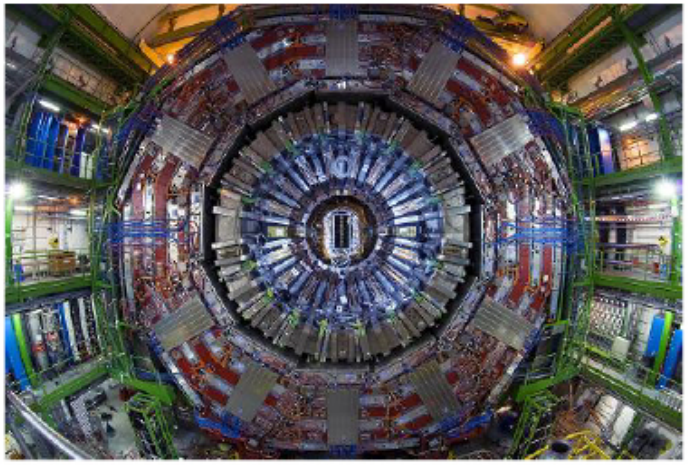
Matter Planck quanta

mass velocity

Increasing the Kinetic energies
of collision particles only serves to
increase the mass-Energies of the ejecta

"Raffiniert ist der Herrgott, aber boshaft ist er nicht.
Subtle is the Lord, but malicious He is not."

[LHC CMS detector]



Einstein

$$mc^2 = E = hv^2$$

Planck

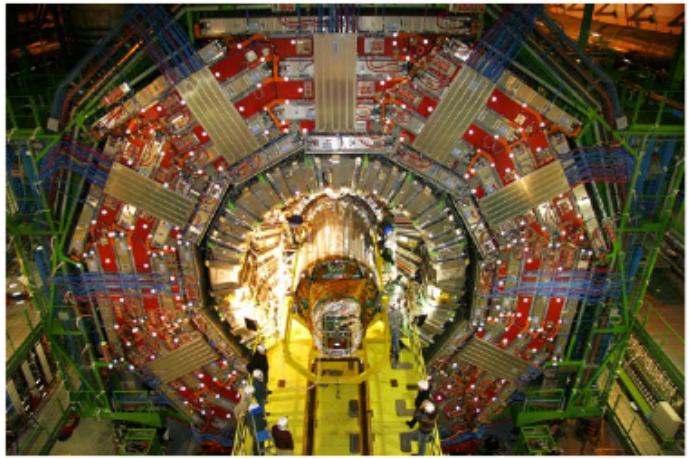
Planck quanta

$$[[mAv^2]]$$

mass velocity

$$E$$

[LHC ATLAS detector]



The key to understanding the mechanics of the quantum and uniting it with the dynamics of the Cosmos
is equilateral charged energy geometries

EM mass-Charge ratios

Charge/mass

$$\left(\frac{q_t}{m_t}\right) = 1.810820762 \times 10^{11} = \left(\frac{q_e}{m_e}\right)$$

4:4 12:12

Note: Tetryons and Leptons can have identical EM mass-Charge ratios

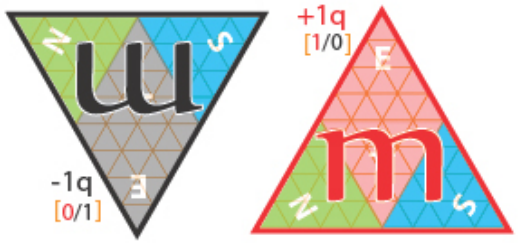
1.33570456 e-20 C

1.810820762 $\left[\frac{q}{m}\right]v^2$ 1e19

7.376238376 e-51 kg

are the basis for mass spectroscopy

All EM mass-Energy-Matter
Is composed of charged mass quanta



$1.33570456 \times 10^{-20}$ C

All EM fields and Particles
are subject to
LORENTZ Forces

$$\vec{F} = q\vec{E} + q\vec{v} \times \vec{B}$$

LORENTZ force = *Electric force* + *charge velocity* × *Magnetic force*

and
NEWTON'S SECOND LAW OF MOTION

$$F = ma$$

Combining with Newton's Third Law
we get a
EM mass-Charge quotient

$$(m/Q)\mathbf{a} = \mathbf{E} + \mathbf{v} \times \mathbf{B}$$

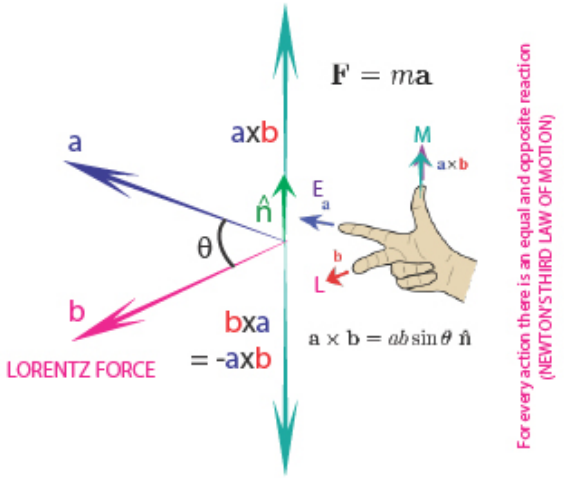
applicable to all charged Tetryonic particles

Leptons

Electron

18,108,207,620 C/kg

Positron



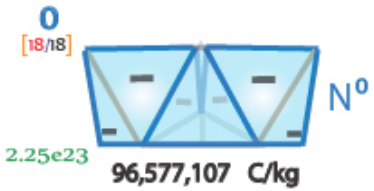
Any two particles with the same EM mass-to-charge ratio follow the same path in a vacuum when subjected to the same external electric field

Baryons

Proton

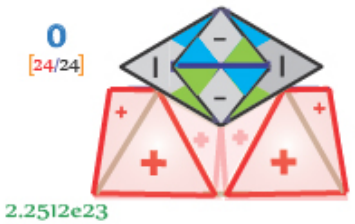
96,577,107 C/kg

Neutron



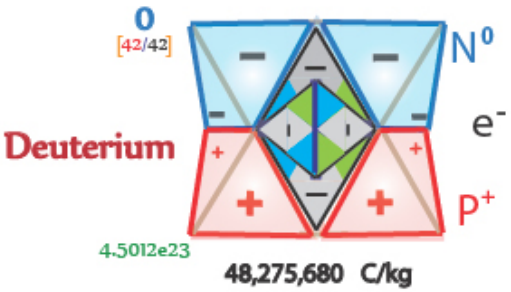
96,577,107 C/kg

Elements



Hydrogen

96,525,627 C/kg



Deuterium

48,275,680 C/kg

Collider particle physics

A collider is a type of a particle accelerator involving directed beams of particles.

Q

E

T 4 [0/4]

4 [4/0] T

Tetryons have the same 1/3 elementary charge as Quarks

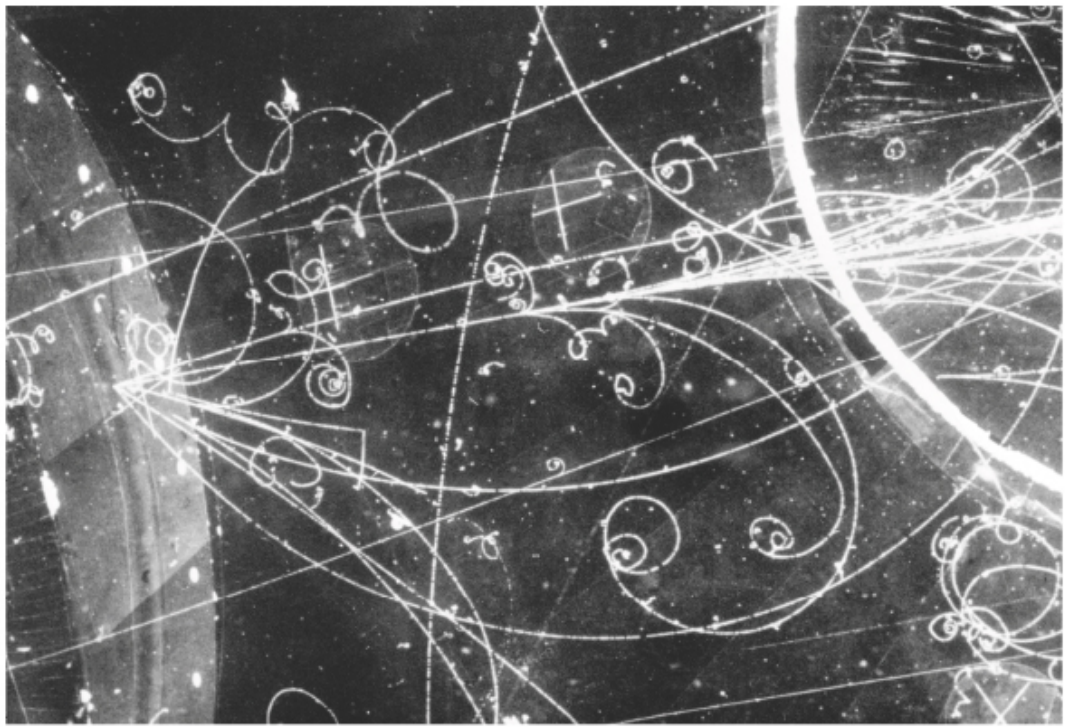
d 4 [4/8]

4 [8/4] d

M

m

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.



Charge Bosons are 2D planar mass-Energies

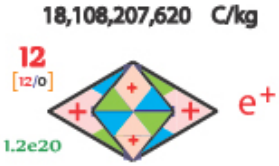
Fermions are 3D standing-wave geometries

Analysis of the by-products of these collisions without a clear definition of, and disntinction between, EM masses and Matter through the charged geometries of Tetryonics a misleading and erroneous picture of the Bosons and Fermions is produced

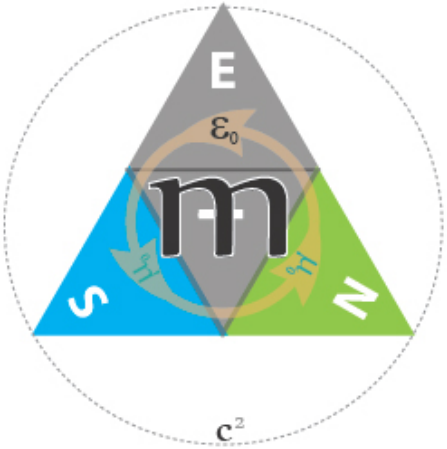
18,108,207,620 C/kg

Tetryons can have the same mass-charge ratios as Leptons

18,108,207,620 C/kg



ElectroMagnetic masses



mass Planck quanta

$$\frac{n\pi}{c^2}\left[\left[mAv^2\right]\right]$$

mass velocity

Charge

$$\frac{1\pi}{c^2}\left[\left[mAv^2\right]\right]$$

Bosons

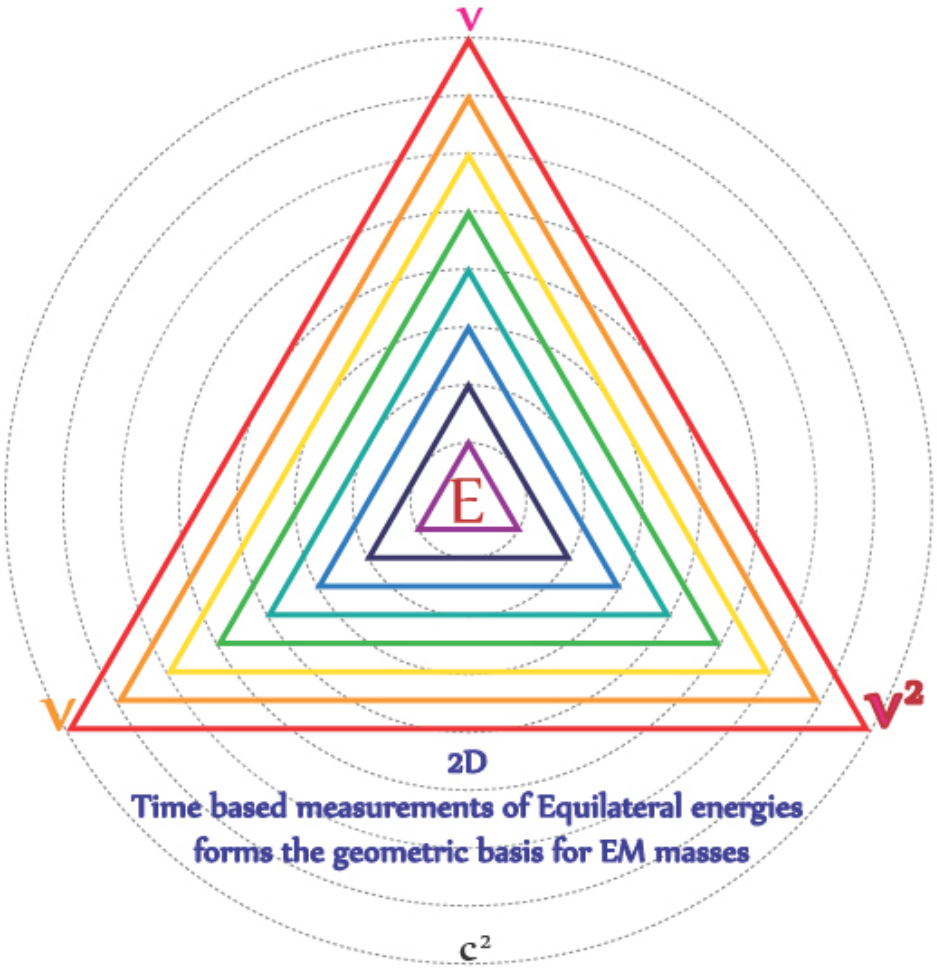
$$\frac{ODD\pi}{c^2}\left[\left[mAv^2\right]\right]$$

Photons

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

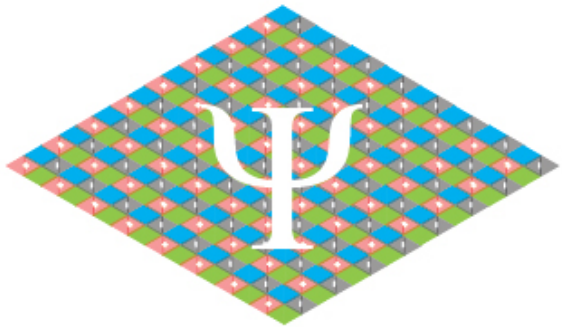
EM waves

$$\frac{EVEN\pi}{c^2}\left[\left[mAv^2\right]\right]$$



Time based measurements of Equilateral energies forms the geometric basis for EM masses

2D Planar divergent EM mass-energies form radiant Electromagnetic waves



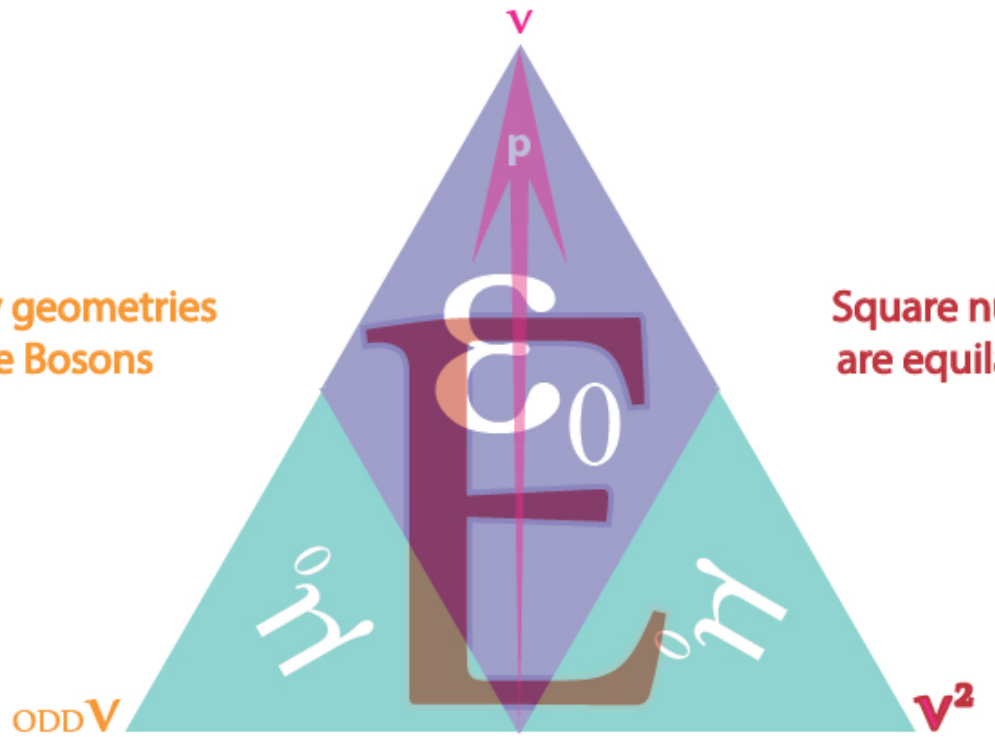
ElectroMagnetic mass-ENERGY is a property of Matter
[being the energy content of its charged fascia per unit time]

Equilateral energy quanta provide the foundation for all the charged geometries of mass-ENERGY-Matter

ENERGY

2D Equilateral scalar energy-momenta

Separated Charge fields create electromotive forces accelerating Material bodies within them



Equilateral energy geometries created Charge Bosons

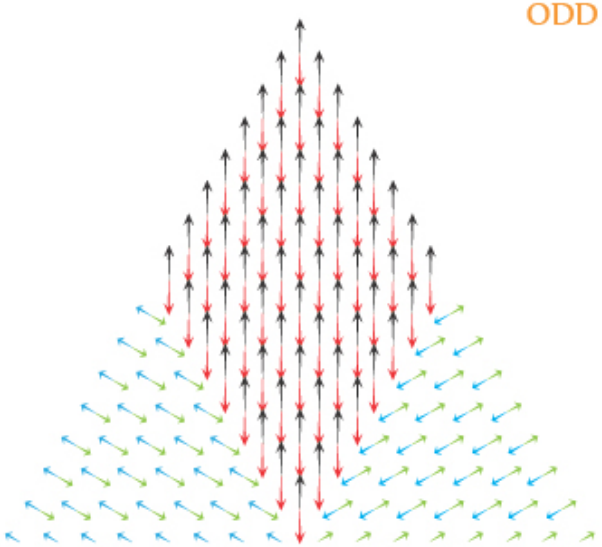
Square numbers in physics are equilateral geometries

ENERGY Planck quanta

$$n\pi\left[\left[mAv^2\right]\right]$$

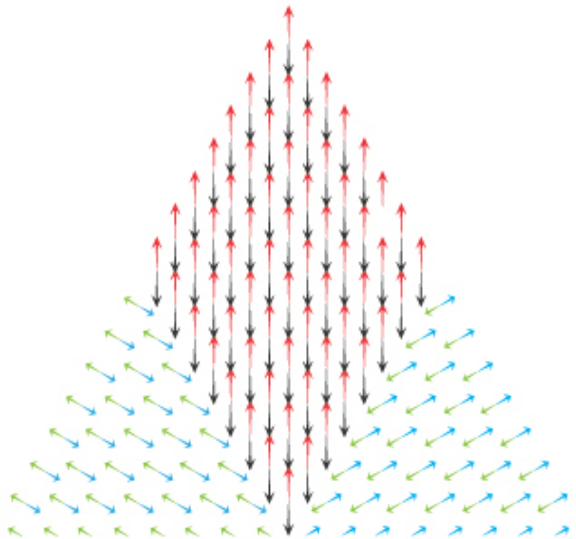
mass velocity

Equilateral energy-momenta form the foundation of all Forces, EM masses & Matter



Negative charge energy fields

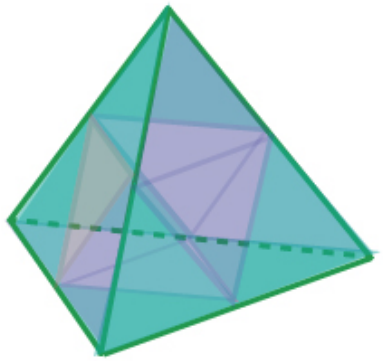
All charges seek equilibrium



Positive charge energy fields

Tetryonic Matter

All Matter is comprised of
[and radiate]
EM mass-Energies

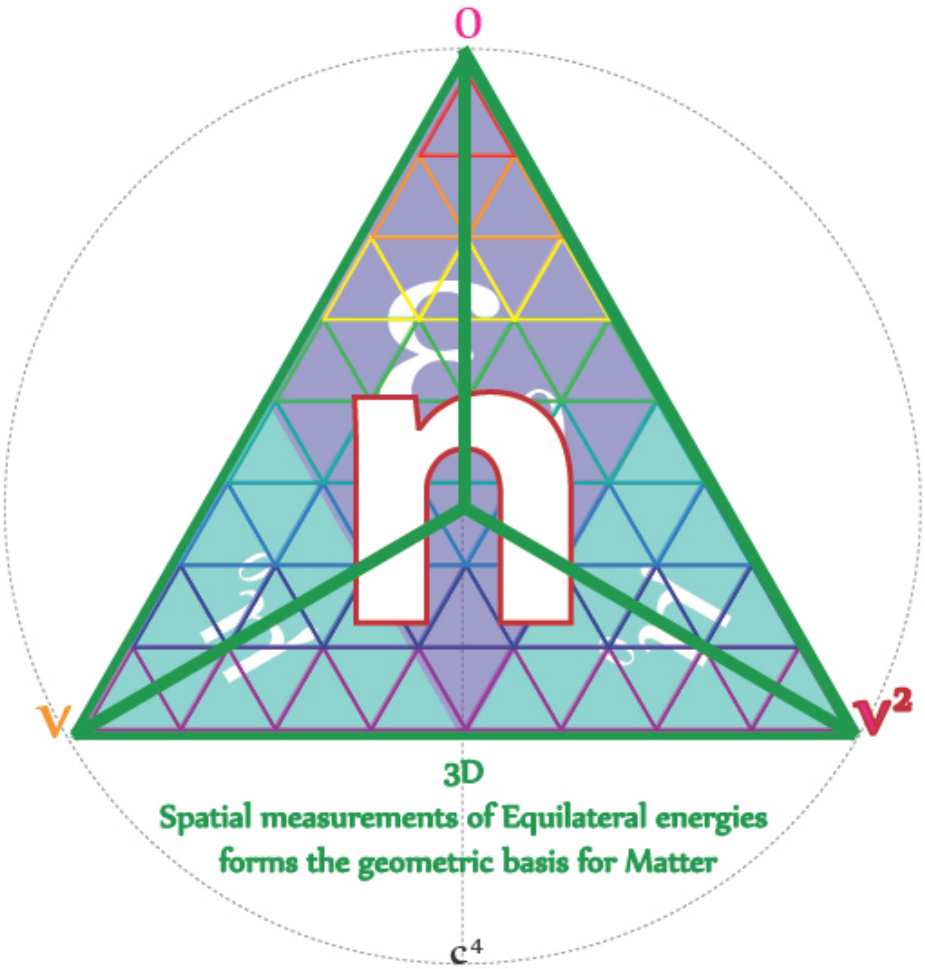


Tetryons are the quantum of Matter

Matter

$$\frac{T\pi}{c^4}\left[\left[mAv^2\right]\right]$$

Planck quanta; mass; velocity

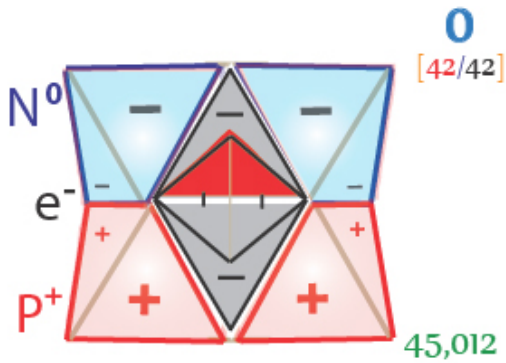


Spatial measurements of Equilateral energies forms the geometric basis for Matter

The mass-Energies of Matter
are Lorentz invariant to velocity changes

Matter is NOT a property of 2D ElectroMagnetic mass-ENERGY
[it is a measurement of the 3D charged geometry and
total mass-energy content of a
defined spatial region per unit time]

All Matter creates a
Gravity field in addition
to its [kinetic]EM fields



Deuterium is the quantum of all Elements

Tetryons
$$\frac{4\pi}{c^4}\left[\left[mAv^2\right]\right]$$

Fermions
$$\frac{12\pi}{c^4}\left[\left[mAv^2\right]\right]$$

Mesons
$$\frac{24\pi}{c^4}\left[\left[mAv^2\right]\right]$$

Baryons
$$\frac{36\pi}{c^4}\left[\left[mAv^2\right]\right]$$

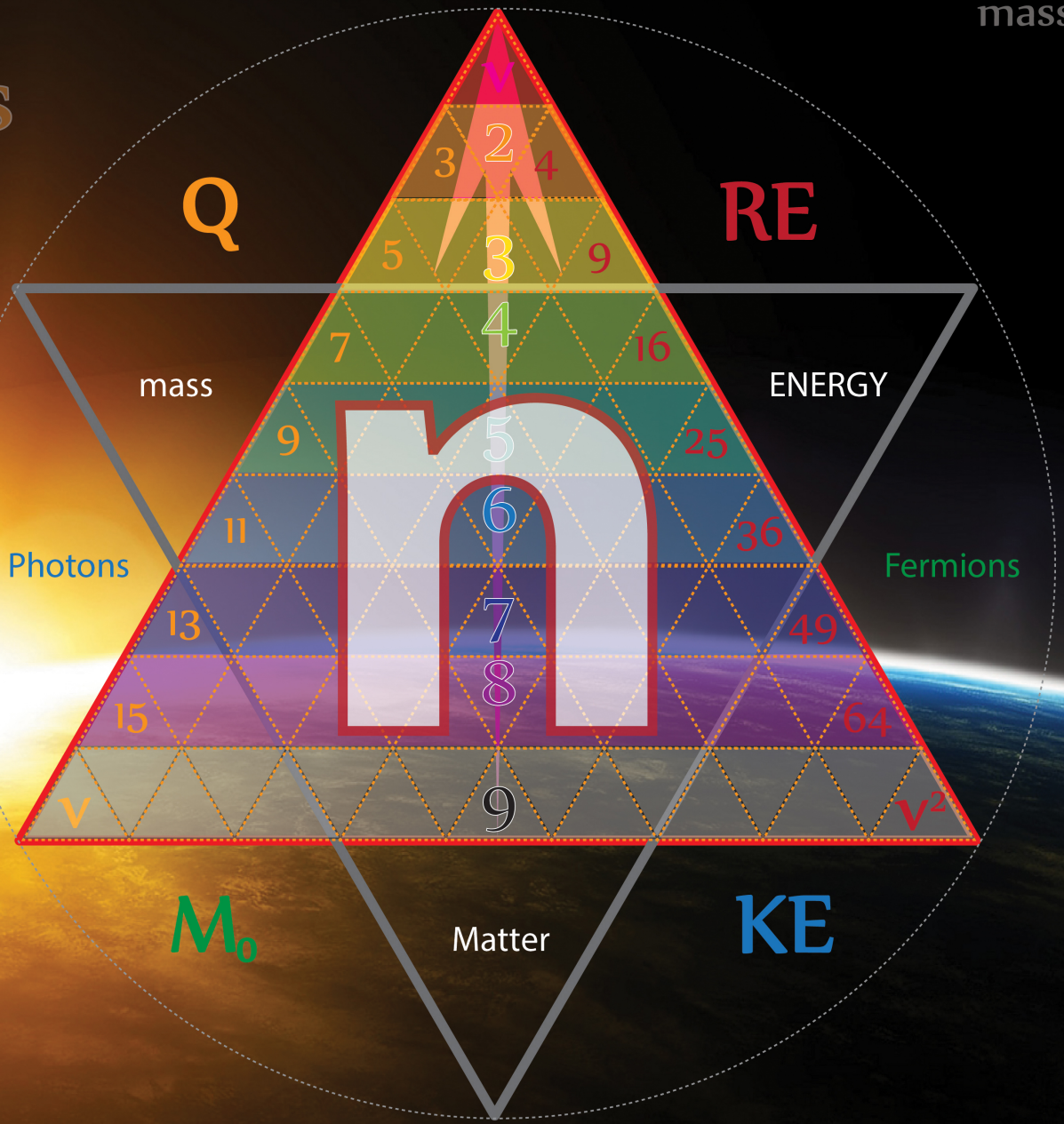
Nuclei
$$\frac{72\pi}{c^4}\left[\left[mAv^2\right]\right]$$

Deuterons
$$\frac{84\pi}{c^4}\left[\left[mAv^2\right]\right]$$

Planck quanta; mass; velocity

Tetryonic Mechanics

The Charged geometry of mass-ENERGY-Matter



Quantum Mechanics | Quantum Electro Dynamics | Quantum Chemistry | Quantum Gravitation