Article

How Nature Computes: Reconciliation with Standard Model (Part 1)

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Abstract

Physicists reduce data, discover fundamentals and write computer models but to understand nature we must understand how it produces itself. Many believe that everything consists of wave functions. Are they producing nature similar to the way computers use information to produce a result? This paper explores how the neutron and proton compute information about energy. The Standard model is accepted as a summary of nature's particles and fields but the purpose of its variations need explanation. I believe the neutron/proton models are the source of nature's laws and their Schrodinger based wave functions produce quantum entities underlying the Standard model's color forces and quarks. Sub-components of neutron/proton field wave functions define dimensions, space, time, gravity and other properties. The possibility that algorithms in the wave functions allow nature to produce other features was examined. For example, can they compute fusion binding energy or expansion of the universe?

Part 1 of this two-part article includes: Introduction; Probability one and energy zero; and Reconciliation of Standard model and Neutron/Proton model.

Keywords: Nature, computation, reconciliation, proton, neutron, Standard Model.

Introduction

The Standard model is based on Dirac wave functions and measured coupling constants for the electromagnetic, weak and strong interactions. While correlating energy data [Appendix 2] for fundamental particles, specific probabilities were found for components of the neutron and proton. This information was developed into a Schrodinger based neutron mass model that decays to a proton, electron and anti-neutrino. The models have been applied to many physics and cosmology questions [4][11][13][14][17][19]. Unlike the Dirac approach, they have self-contained coupling constants and result in tables filled with fundamental information. For example, the tables include mass, kinetic and field energies underlying four fundamental interactions [6][7].

The Schrodinger equation described by MIT as unitary evolution [18] has a simple solution: Probability P=1 in the left hand side (LHS) of the Schrodinger equation is equal to the multiple of complex conjugates exp(iEt/H)*exp(-iEt/H) in the right hand side (RHS) where exp(iEt/H) stands for the natural number 2.718 to power (iEt/H), *i* is the imaginary number, H=Planck's constant, E is field energy and time t is the time around a quantum circle at velocity C. The

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number 1 has been separated into two expressions that represent waves, but it is a dynamic separation; it repeatedly comes back to unity as time moves forward. Many physicists moved past the Schrodinger equation in favor of the Dirac equations because Schrodinger's simple equations were not considered 3 dimensional and relativistic. The author discovered that they are three dimensional and relativistic when used within restrictions described below.

Probability one and energy zero

Consider a beginning with zero energy. This avoids the endless argument that things are made of other things, ad infinitum. Meaningful equal and opposite energy pairs come into existence at the same time but represent zero overall. Also consider probability one as a beginning condition.

When the Schrodinger equation is solved it "computes" probability=1 that contains things we observe about energy. The right hand side contains energy values of interest in its complex conjugates. Sinusoidal waves vary with exp(i theta)=cos theta +i sin theta as theta increases. They are circles with a vertical imaginary axis and a real horizontal axis. Results are restricted to the unitary point where the wave function collapses on a quantum circle with Et/H=1. With the right amount of mass, kinetic energy and field energy circular orbits are formed with real axis. The author looked for orbits related to entities in the Standard model.

The work below derives orbits that obey energy zero. This means there will be positive and negative energy terms created through separation. It will be shown that the Schrodinger equation becomes relativistic like the Dirac equation with P=1 and energy=0.

For two components, P=1 is calculated below:

P	p1*p2=exp(-i Et/H)*exp(i Et/H)		
	with Et/H=1		
multiply by adding the logarithms			
ln P	ln(p1*p2)=-i+i=0		
P	exp(0)=1		

This E=0 and P=1 constraint is further defined below. For quarks there are four probabilities of interest that contain exponential functions where p=1/exp(N). The logarithmic values N are explained in Appendix 2. (The fraction 0.431=1/3+ln(3)-1).

Example of exponent sign change:

exp(2)=7.39=1/exp(-2)

Probability 1 Constraint

1=p1*p2/(p3*p4) but each probability=1/exp(N)

N1=13.431	N3=15.431
N2=12.431	N4=10.431
p1=1/exp(13.431)	p3=1/exp(15.431)
p2=1/exp(12.431)	p4=1/exp(10.431)

1=1/exp(13.431)*1/exp(12.431)/(1/exp(15.431)*1/exp(10.431))

These N values represent P=1, but it has four probability components.

Energy components are restricted to overall zero energy. Mass and kinetic energy are positive and field energy is negative. The example math below is similar to Dirac's development that separates energy terms from time terms.

Constrain Energy to zero			
1=exp(itE/H)*exp(-itE/H)			
take the natural log and divide boths sides by i			
0=itE/H-itE/H			
0=Et/H-Et/H	Example:		
0=(E-E)*(t/H-t/H)	a=1/b	a=.5	b=2
take the square root. Since Et/H=1, 1/E=t/H	ab-ba		0
0=E1-E1 and 0=t/H-t/H	(a-a)*(b-b)=0	(0.5-0.5)*(2-2)=0	

The example math above can be expanded to give the energy =0 constraint with four components, each with matching complex conjugates.

1=exp(itE1/H)*exp(-itE1/H)*exp(itE2/H)*exp(-itE2/H)*exp(itE3/H)*exp(-itE3/H)*exp(itE4/H)*exp(-itE4/H)

The natural log of the RHS is:

0=(itE1/H)+(-itE1/H)+(itE2/H)+(-itE2/H)+(itE3/H)+(-itE3/H)+(itE4/H)+(-itE4/H)

Using the square root procedure above with 1/E=t/H, we only need the energy terms that are equal and opposite (0= E-E). The square root also has a (0= t/H-t/H) solution that contains inverted E terms.

E1-E1+E2-E2+E3-E3+E4-E4=0
E1+(E3+E4-E1-E2)+E2-E3-E4=0

These E values will be mass, kinetic energy and field energy for quarks and color forces.

Evaluating E

Evaluating E requires consideration of overall probability, not just the probability of particles. I believe there was an initial probability separation for neutrons and the number that exist. Specifically, P=1= probability of each neutron* number of neutrons= 1/exp(N)*exp(N). The probability of each neutron is 1/exp(N). The neutron itself is made of improbable components like quarks. Appendix 2 contains sets of logarithmic values called N values for probabilities of the neutron components (called fundamental N values). The same set of N values gives the energy of its components. We can evaluate the probability of particles that makes up the neutron if energy is itself a probability, i.e. p=e0/E=1/exp(N), where e0 is a small constant. Probability contains information as defined by Shannon [12].

p=e0/E=1/exp(N), i.e. E=e0/p.

With p=1/exp(N), E=e0*exp(N).

E1-E1+E2-E2+E3-E3+E4-E4=0
Identify E as E=e0*exp(N), using the same N values as the LHS.

0=eo*exp(13.431)-eo*exp(13.431)+e0*exp(12.431)-e0*exp(12.431)+e0*exp(15.431)-e0*exp(15.431)+eo*exp(10.431)-e0*exp(10.431)

Mass plus kinetic energy will be defined as positive separated from equal and opposite negative field energy. E1 is the only mass term, E3 and E4 are field energy and the remainder is kinetic energy.

E1+(E3+E4-E1-E2)+E2-E3-E4=0 (rearrange)
E1 is mass, (E1+E4-E1-E2)+E2 is kinetic energy.
E3 and E4 are equal and opposite field energies
mass1 + kinetic energy- field energy3-field energy4=0

Probability 1 in the LHS gives the probability of finding mass1 with kinetic energy at the collapse point on the circle defined by exp(iE1 t/H)*exp(-iE1 t/H)*exp(iE2 t/H)*exp(-iE2 t/H), etc.,.

How nature computes

The logarithm of the Schrodinger equation has equal and opposite energy pairs
The anti-log of the energy pairs is exp(iEt/H)*exp(-iEt.H)
The above expression multiplies to P=1 with the following restrictions.
Energy zero (E-E=0) but each energy has a probability with p/p=1.
1=exp(itE/H)*exp(-itE/H)
Energy pairs can be separated from time pairs as follows:
take the natural log and divide boths sides by i
0=itE/H-itE/H
0=Et/H-Et/H
0=(E-E)*(t/H-t/H) with E=1/(t/H)
0=(E-E)
Discover a useful algorithm called W inside energy 0 relationships.
0=W*Energy-W*Energy
creating wavefunctions with imbedded values W
that result in exp(i(EW)t/h)*exp(-iEWt/H)=1

Neutron and proton energy zero models (0= Em-Ef) with possible imbedded algorithms will be discussed below.

Quarks

The Schrodinger unitary evolution equation with four parts, probability 1 and energy 0 will be shown below to represent one of the quarks. The equation for energy is E=e0*exp(N). The pre-exponential value e0 is evaluated from the known mass of the electron (0.511 MeV) and its N= 10.431-3*ln(3-1)=10.136. With this N value the pre-exponential is: e0 = 0.511/exp(10.136)= 2.025e-5 MeV. Natural log N= 10.136 for the electron means that the electromagnetic field 3*(ln(3)-1) has been subtracted from the value 10.431 giving the electron the electromagnetic field E= 2.02e-5*exp(3*0.0986)= 27.2e-5 MeV.

The four N values discussed in the section entitled "Evaluating E" and their associated energy is called a quad. It places E=e0*exp(N) in a box to the right of each N value. The key to distinguishing mass (E1) from kinetic energy (E2) and two fields (E3) and (E4) is shown below. The positions are not interchangeable.

Mass	Field 3
Kinetic Energy	Field 4 (G)

		mev			mev	
		E=e0*exp(N)			E=e0*exp(N)	
N1	13.43	13.8	E1 mass	N3	15.43	101.95	E3 field
N2	12.43	5.1	E2 ke	N4	10.43	0.69	E4 field

E1=2.02e-5*exp(13.43)=13.79, E2=2.02e-5*exp(12.43)=5.08, E3=2.02e-5*exp(15.43)= -101.95, E4= 2.02e-5*exp(10.43)= -0.69 (all in MeV).

Overall E1+(E3+E4-E1-E2)+E2- (E3-E4) =0= (E1-E1)+(E2-E2)+(E3-E3)+(E4-E4) obeys the energy zero restriction. I call these diagrams energy zero, probability 1 constructs. They contain energy components of a quark.

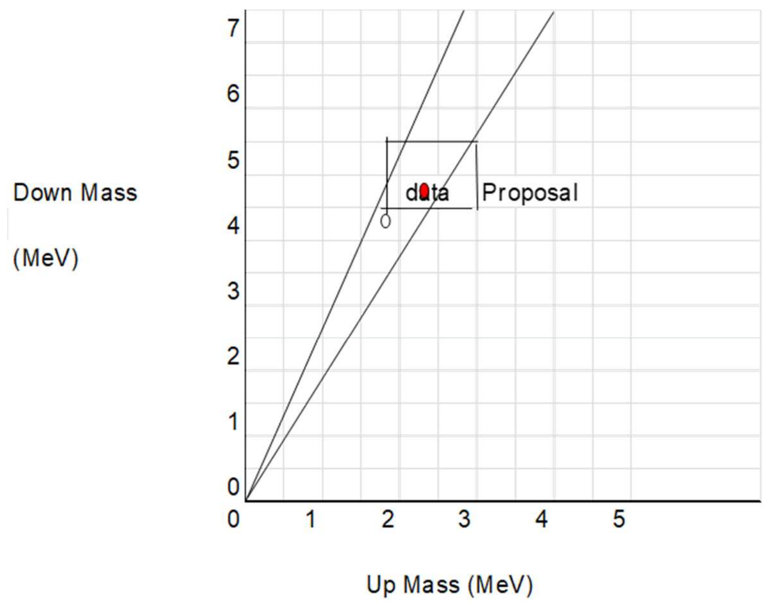
1=exp(itE/H)*exp(-itE/H)

	E	E	
	Mass plus	Strong Field Energy	
	Kinetic Energy	Gravitational Field Energy	
	MeV	MeV	
Mass	13.8	-101.95	Strong field
E3+E4-E1-E2	83.76	-0.69	Grav field component
E2	5.08		
	102.64	-102.64	Totals

At wave function collapse the energy terms multiply to unity. This means with probability 1 that quark mass E1 with kinetic energy (E3+E4-E1-E2+E2) is orbiting field energy E3 and mass+ ke is also orbiting field energy E4. Field energy E4 is a component of gravitational field energy. The energy E2+E2 (in the Appendix 2 full model) equals 10.15 MeV. This energy is fundamental to atomic fusion [17] and expansion of the universe [19].

According to the Particle Data Group (PDG) 2017 listings [9], the Down and Up quarks have energies shown in the graph below.

Study of mesons and baryons [3][20] indicated that the above quark mass 13.8 MeV transitions to mass 2.49 MeV + 11.31 MeV of kinetic energy (conserving energy). Two Up quarks with mass 2.49 MeV and one Down quark with mass 4.36 are inside protons and neutrons.



rpp2014-rev-quarkmasses.pdf
Figure 2

Proposal for Up quark mass: Mass= 1.86+.622= 2.4896 MeV

Proposal for Down quark mass: Mass=2*1.86+.622=4.36 MeV

Data for fundamental particles is correlated in Appendix 2. The lowest value in the quark series Up, Down, Strange is the value =2.02e-5*exp(11.431)=1.86 MeV. The natural log of 3= 1.086 and adding N=10.33+1.086= 11.432. Adding the natural log of 3 multiples 0.622 by 3 equals 1.86 MeV. The masses match PDG data and with 1.86= 3*0.622 it explains how mesons and baryons decay. When nucleons are bombarded in high energy experiments, quarks do not fly out but jets of mesons and baryons do. Mesons decay to electrons (0.622->0.511+0.11 MeV) and kinetic energy [9].

Prove that particles with P=1 and E=0 constraints are relativistic

If an equation satisfies the famous relationship E^2= (mC^2)^2+P^2C^2 it is relativistic [8]. P=momentum=mV and gamma is a shift into the time dimension with velocity. The above equation can be used to define gamma.

Gamma= (1-(V/C)^2)^0.5=m/(m+ke) (mass 13.8 MeV is already mC^2).

Example calculations for quark:

Quark	Energy zero	E1+	(E3+E4-E1-E2)+		E2	-E3-E4=0	
		13.797	83.76		5.08	-102.63	0.000

Quark in example above							Energy=102.63 MeV
g=m/(m+ke	V/C	P	PC (mev)	P^2C^2	M^2	P^2C^2+M^2	E^2
0.134	0.991	3.392E-07	101.70	10343.33	190.36	10533.69	10533.69

gamma=13.8/(13.8+83.8+5.07)=.135

P=mV=m/gamma*V/C*C/C^2	
m is in mev	

It is proven above that P^2C^2+ (MC^2)^2= E^2. The square root of E^2 is 102.63 MeV, the total energy in the quad E3+E4. The energy 0, probability 1 constraint makes the Schrodinger equation relativistic. Conversely, it defines the relativistic equation E^2= (MC^2)^2+P^2C^2.

But if the Up quark is 4*0.622=2.49 MeV instead of 13.797 MeV with mass plus kinetic energy held constant,

m	ke	m+ke
13.797	88.83673	102.6337
2.49	100.144	102.6337

P^2C^2+(MC^2)=E^2 is maintained. Also, the probability 1 and energy 0 constraints are maintained. The transition to a lower mass quark is allowed.

Neutron model with low energy quarks

Wave functions for the neutron P=(exp(iEt/H)*exp(-iEt/H) contain energy pairs: 0=(E-E)= (Emasske- Efields). With this understanding, we can write the model in two columns. All the energy values originate in the neutron model reviewed in Appendix 2 and are simply rearranged into two columns. The column on the left below contains all of the mass plus kinetic energy terms for the neutron. The column on the right contains all the field energies. Both columns totals are 960.608 MeV, which is higher than the mass of the neutron. The neutron mass (939.565 MeV) is very close to the Particle Data Group value but the neutron is in a -20.3 MeV Strong residual energy field, has expansion potential energy, expansion kinetic energy and one neutrino has been ejected. Changes in kinetic energy 10.15 MeV inside the neutron or proton decreases as fusion occurs.

The total field energy consists of strong field energy linked to quarks and gravitational field energy linked to mass. Gravitational field energy totals 2.801 MeV= 0.687*3+0.740.

	1=exp(itE/H)*exp(-itE/H)				
	E		E		
	Mass plus		Strong Field Energy		
	Kinetic Energy		Gravitational Field Energy		
	MeV		MeV		
Down Quark	4.36		-753.29	Down Strong Field	
Kinetic E	739.470		-0.687	Grav Field component	
Up Quark	2.49		-101.95	Up Strong Field	
Kinetic E	89.993		-0.687	Grav Field component	
Up Quark	2.49		-101.95	Up Strong Field	
Kinetic E	89.993		-0.687	Grav Field component	
E-E match	0.000				
Fusion KE	10.151				
ke	0.622		-0.622	field	
data			-0.740	Grav Field component	
939.565346	939.565346	Neutron mass (MeV)		-2.80114	
t neutrino	0.740			Grav Field Total	
Expansion PE	10.151				
Expansion KE	10.151				
Fusion release					
Total M+KE	960.608	Total Field	-960.608		

0=(Em-Ef)

0=(Em-Ef)*(t/H-t/H) with each E=1/(t/H)

0=Emt/H-Eft/H

0=itEm/H-itEf/H

1=exp(itEm/H)*exp(-itEf/H)

Em and Ef in the equation above are equal (0= Em-Ef). The equation applies to the total for the column (960.608 MeV). Because the quarks, their kinetic energy and fields also total zero (0= m+ke- Ef), they can individually compute 1= exp(itE/H)*exp(-iEt/H). But the field energy for quarks determines the radius of its quantum circle. Nature's four forces are determined by mass with kinetic energy imbedded in the fields shown.

The above diagram is the zero energy, probability 1 construct for the neutron.

The Proton model with the fusion algorithm

The neutron and proton both exist at the beginning. The Maxwell Boltzmann relationship gives the proportion of neutrons as a function of initial kinetic energy (temperature):

P=exp(-e/kt)= exp(-1.293/10.5)		
0.880391	Probability of neutron at 10.15	
8.73E-06	P neutron at 0.111 MeV	

With expansion, kinetic energy decreases but there are actually many neutrons at 0.111 MeV because they decay with the following equation:

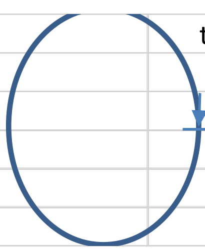
fraction neutrons=1-EXP(-0.693*t/800)		
0.500074	at 800 seconds	
0.649128	at 540 seconds and 0.111 MeV	

The proton model shown below contains slightly different combinations of kinetic energy but again the two columns contain the zero energy property 0= (Em-Ef) that nature calculates as 1=exp(iEm*t/H)*exp(-iEf*t/H). The proton mass is 1.293 MeV lower than the neutron due to the loss of the electron, kinetic energy (0.622) and neutrinos.

		1=exp(itE/H)*exp(-itE/H)				
		E		E		
		Mass plus		Strong Field Energy		
		Kinetic Energy		Gravitational Field Energy		
		MeV		MeV		
	Down Qua	4.36		-753.29	Down Strong Field	
	Kinetic E	739.470		-0.687	Grav Field component	
	Up Quark	2.49		-101.95	Up Strong Field	
	Kinetic E	89.993		-0.687	Grav Field component	
	Up Quark	2.49		-101.95	Up Strong Field	
	Kinetic E	89.993		-0.687	Grav Field component	
	E-E match	0.000				
	neutrino ke	-0.671				
	Fusion KE	10.151	E*Wfusion=10.151*(1-exp(-2/2))			
	E/M field	-2.722E-05				
data	ae neutrino	-2.025E-05		-0.740	Grav field component	
938.272013	Proton M	938.272013			-2.801	
outside	electron	0.511			Grav Field Total	
proton	Kinetic E	0.111		-0.622	field	
	v neutrino	0.671				
	t neutrino	0.740				
	Expansion	10.151				
	Expansion	10.151				
	Fusion release					
	Total M+KE	960.608	sum m+ke	-960.608	-2.801	

The W algorithm will be discussed later.

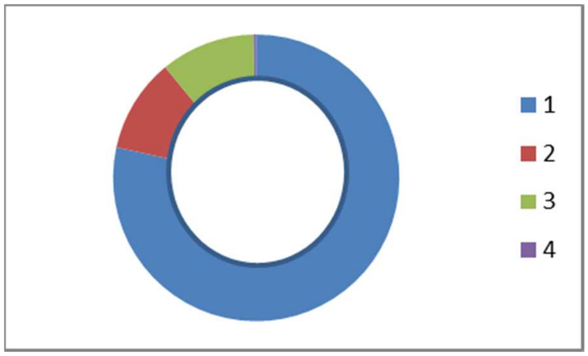
Fields determine the radius of quantum circles, R= HC/(2pi*Efield)=1.97e-13 MeV-m/Efield. This equation is just Et/H=1 with time around the circle determined by t=2*pi*R/C. (Et/H yields R= (HC/2pi)/Efield where H is the full Planck constant). The total field energy is equal and opposite mass plus kinetic energy.



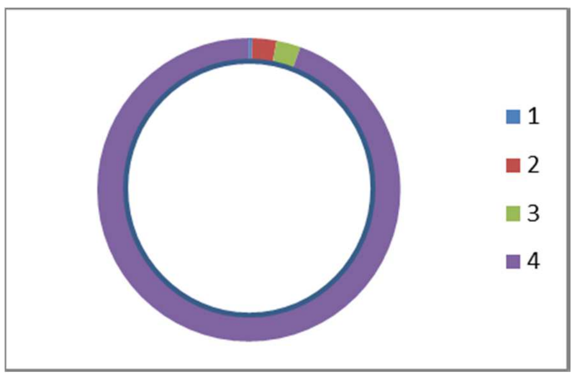
time around Schrodinger circle			
Et/H=1			
	E	101.95	MeV
	e0	2.0247E-05	MeV
	N	15.43	

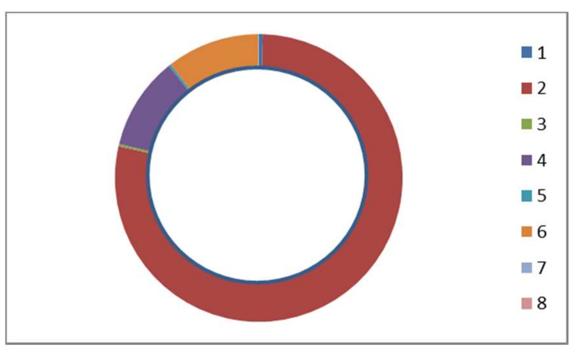
The wave function is collapsed (calculated) with the result 1:

The Standard model is based on strong field energy values called color forces linking quarks together. With Et/H=1, the field energy components above can be represented on the circumference of a circle where 2*pi radian values are fractions of -960.608 MeV. Since mass plus kinetic energy is equal and opposite field energy the circumference also represents the total. However, it is in the opposite direction. The waves meet and collapse at Et/H=1.



In the Standard model the quarks are at the intersections of the field colors. The 16 entities in the Standard model (see Appendix 1) describe variations and combinations of fields and quarks. Asymptotic freedom [1] is a chromodynamics concept explaining why quarks can't escape the proton. It is also instructive to show the inverse of the field energy, because it is time by the equation t=H/E. The fields and quarks intersect at Et/H=1.





Heisenberg's uncertainty principle identifies complementary properties:

Time and energy, momentum and position

If one tries to know exactly what the energy is at a point on the circle, the time interval becomes uncertain. The reason: "energy is the inverse of the time interval around the circle".

We don't need to write the wave functions. Everything can be described by dimensions, circles and spheres of different size and direction. But it is important to understand these concepts:

1) The right hand side (RHS) of Schrodinger's equation contains field information (and circle radii).
2) The left hand side (LHS) of Schrodinger's equation is "information (probabilities) about the energy in the RHS". Both sides of the Schrodinger equation are equal and "built into nature". Our access to it is through the LHS. We observe particles distributed by energy throughout nature.
3) Nature computes by incorporating values in the columns that obey energy zero and probability one. At the collapse point Et/H we automatically perceive information about energy.

Reconciliation of Standard model and Neutron/Proton model

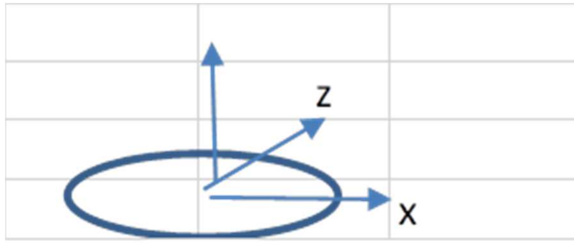
The neutron/proton model and the standard model establish basic properties like those listed below.

PROPERTIES
X, Y, Z
REVERSE X,Y,Z
PLANES XY, YZ AND XZ
AROUND CIRCLE LEFT AND RIGHT ---TIME
HANDEDNESS (PARITY)
CHARGE UP or DOWN
SPIN

The relationship between dimensions, directions and N value suffixes

Colors and entities below refer to the Standard model reviewed in Appendix 1. Look at the red, green and blue field energies in the neutron model above (753, 101, 101 MeV). N for these circles is 17.432, 15.432 and 15.432. Appendix 2 shows that each of these N values has 1.0986 added to it (1.0986 is the natural log of 3). I believe this means there are three "species" one for each of three dimensions (X, Y and Z).

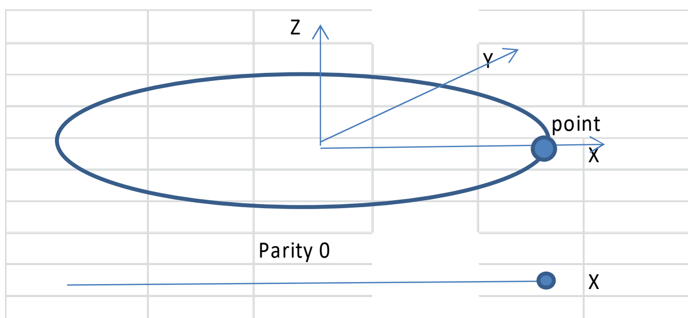
Six of the entities in the Standard model have a quark linked to a single field. Other entities have a quark influenced by two fields. With two fields the quark responds in two dimensions, creating planes rather than one dimensional confined axis. In combination with parity and spin, the arrow (charge) could be up or down. The Standard model entities are designated clockwise (R) or counter clockwise (L). Think about the possibility that these properties create dimensions, directions and planes.



Parity is handedness, a combination of the charge's direction and motion in the circle. In the neutron model time is moving around a circle. Its direction can be clockwise or counter clockwise. Physicists use a concept called CPT invariance (Charge, Parity and Time add to a constant). Charge is field energy but as a property it is positive or negative one. Parity is dependent on the perspective of the observer and the diagram above can be viewed looking down or looking up. This switches L and R like looking in a mirror. Perspective can't change a field and this means that orientation is itself a property. Our perspective of a circle changes to a line if the diagram is observed from the edge and time direction can't be discerned. The circle represents a sinusoidal field. Particles have spin (convention is half spin) with the value H.

Entities without e or v components and one field

The fields and quarks with kinetic energy define dimensions, X, Y and Z.



Standard model [1][Appendix 1]

`	Y	X	Z			Y=-1/3*(Red+Green+Blue)+1/2*(Y+P)			
				e	v	Y			
1	1			1		0.166667	u	R	2.490
2		1		1		0.166667	u	R	2.490
3			1	1		0.166667	u	R	2.490
4	1				1	0.166667	d	R	4.979
5		1			1	0.166667	d	R	4.979
6			1		1	0.166667	d	R	4.979

Proton model

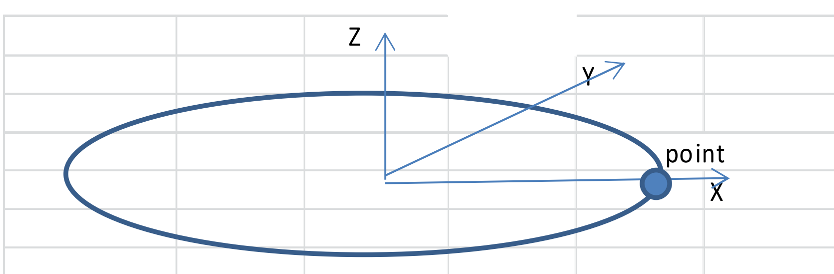
The corresponding proton model entities with the same numbers are rearranged for comparison with the Standard model. As indicated in Reference 1, entities 1,2 and 3 are Up quarks and 4,5 and 6 are Down quarks. The energies are provided by the proton model. Each entity is a energy 0, probability 1 construct. (The mass+ kinetic energy minus the two fields= zero. Each energy has an N value and p=1/exp(N). Overall P= p*p/(p*p) =1) This means they are entities independent of the proton as a whole. This becomes important when analyzing mesons and baryons since they are combinations of entities from the models.

1=exp(itE/H)*exp(-itE/H)

		E	E	
		Mass plus Kinetic Energy MeV	Strong Field Energy Gravitational Field Energy MeV	
1	Up Quark	2.49	-753.29	Down Strong Field
	Kinetic E	751.491	-0.687	Grav Field component
2	Up Quark	2.49	-101.95	Up Strong Field
	Kinetic E	100.144	-0.687	Grav Field component
3	Up Quark	2.49	-101.95	Up Strong Field
	Kinetic E	100.144	-0.687	Grav Field component
4	Down Qua	4.36	-753.29	Down Strong Field
	Kinetic E	749.621	-0.687	Grav Field component
5	Down Qua	4.36	-101.95	Up Strong Field
	Kinetic E	98.274	-0.687	Grav Field component
6	Down Qua	4.36	-101.95	Up Strong Field
	Kinetic E	98.274	-0.687	Grav Field component

Entities without e or v properties and two fields

These entities define one point on a circle in the x–y, y-z, or x-z planes



Standard model [1]

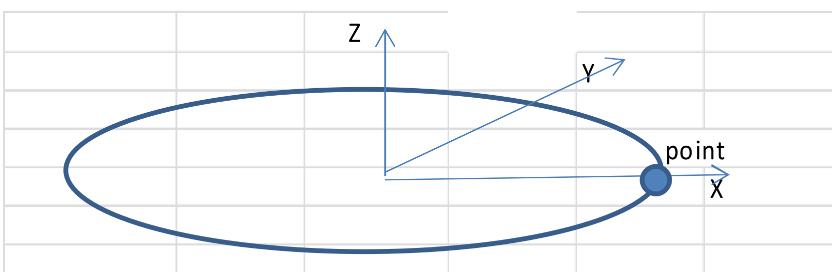
`	Y	X	Z			Y=-1/3*(Red+Green+Blue)+1/2*(Y+P)			
				e	v	Y			
7		1	1			-0.66667	u	L	2.490
8	1		1			-0.66667	u	L	2.490
9	1	1				-0.66667	u	L	2.490

Neutron model comparison with Up quarks and two fields

		1=exp(itE/H)*exp(-itE/H)			
		E		E	
		Mass plus		Strong Field Energy	
		Kinetic Energy		Gravitational Field Energy	
		MeV		MeV	
7	Up Quark	2.49	X	-101.95	Down Strong Field
	Up Quark		Z	-753.29	Up Strong Field
	Kinetic E	853.435		-0.687	Grav Field component
8	Up Quark	2.49	Y	-101.95	Up Strong Field
	Down Quark		Z	-101.95	Up Strong Field
	Kinetic E	202.088		-0.687	Grav Field component
9	Up Quark	2.49	Y	-101.95	Up Strong Field
	Up Quark		X	-753.29	Down Strong Field
	Kinetic E	853.435		-0.687	Grav Field component

Entities with e or v properties and two fields

These entities define one point on a circle in the x–y, y-z, or x-z planes



Standard model

`	Y	X	Z			Y=-1/3*(Red+Green+Blue)+1/2*(Y+P)			
				e	v	Y			mass
10	1		1	1	1	0.333333	d	L	4.979
11	1	1		1	1	0.333333	d	L	4.979
12		1	1	1	1	0.333333	d	L	4.979

Proton model comparison (two fields)

		1=exp(itE/H)*exp(-itE/H)			
		E		E	
		Mass plus		Strong Field Energy	
		Kinetic Energy		Gravitational Field Energy	
10	Up Quark	4.36	Y	-101.95	Up Strong Field
	Down Quark		Z	-101.95	Down Strong Field
	Kinetic E	200.22		-0.687	Grav Field component
11	Down Qua	4.36	Y	-101.95	Down Strong Field
	Up Quark		X	-753.29	Up Strong Field
	Kinetic E	851.57		-0.687	Grav Field component
12	Down Qua	4.36	X	-753.29	Down Strong Field
	Up Quark		Z	-101.95	Up Strong Field
	Kinetic E	851.57		-0.687	Grav Field component

The standard model contains all the entities below. The lower energy quarks, their fields and the three neutrinos are in the neutron and proton model but there are higher energy quarks and bosons, known as the W and Z bosons. The N values for mass is shown to the left and the N values for fields is shown on the right. In some cases there are two N values that add. For example the charm field= 2.02e-5*exp(17.432)+ 2.02e-5*exp(17.432)=1506.6.

PDG							
Data (MeV)			Mass	Ke	Field	N1	N2
2.49	11.432	Up	2.49	99.46138	101.9514	15.432	
4.36	11.432	Down	4.36	97.59138	101.9514	15.432	
100	15.432	Strange	101.95	651	753.3245	17.432	
1275		Charm	1283	224	1506.649	17.432	17.432
4180	17.432	Bottom	4174.768	1392	5566	19.432	
173000.0	21.432,22.5	Top	160800	0	160800	22.5	21.430
125200.0	19.432,22.5	Higgs	125237	0	125237	22.5	19.432
80399	22.106	W+,W- Boso	80399				
91188	22.228	Z boson	91188				
0.511	10.136	electron	0.511				
	2*0.0986	e neutrino	2.47E-05				
	10.333	mu neutrino	0.622				
	10.51	Tau neutrin	0.74				
		muon	105.6584				
		taon	1776.82				

The quark masses 2.49+ 4.36+ 1283+ 4174= 5566 MeV. This makes E=2.02e-5*exp(19.432)= 5566 the source of the lower quark masses. The N=11.432 based quark masses were discussed in the section entitled Quarks. The N=15.432 quark mass (101.95) is “right on” the PDG data. The bottom quark mass is 4175 = ¾* 5566 and the charm mass is the remainder. With these values all the Particle Data Group data is matched.

The W boson and H boson

The other feature of Standard model is the role of the W boson. Appendix 1 plates TT and UU describe the W boson as the link between entities displayed vertically.

The Higgs mass is:

125237=2.025e-5*EXP(19.432)+2.02e-5*EXP(22.5)

The Top quark mass is:

160800=2.025e-5*EXP(21.432)+2.02e-5*EXP(22.5)

The Higgs is viewed as the source of mass for the other entities. Its N value is related to 90/4=22.5.

The Standard model is often shown in families. For example, the Charm, Bottom and Top quark plus the muon and taon are in their own higher energy family. The charm quark and top quark fall into the reference 1 category of two fields and one quark. They have no e or v property since they are not in the neutron or proton.

7		1	1			-0.66667	L
8	1		1			-0.66667	L
9	1	1				-0.66667	L

The corresponding energy 0 construct is below:

	1=exp(itE/H)*exp(-itE/H)		
	E		E
	Mass plus		Strong Field Energy
	Kinetic Energy		Strong Field Energy
Charm	1283		753.3
			753.3
Charm Ke	224		

	1=exp(itE/H)*exp(-itE/H)		
	E		E
	Mass plus		Strong Field Energy
	Kinetic Energy		Strong Field Energy
Top Quark	160800		41130
			119670

	1=exp(itE/H)*exp(-itE/H)		
	E		E
	Mass plus		Strong Field Energy
	Kinetic Energy		Strong Field Energy
Higgs	125237		5566
			119670

(*Continued in Part 2*)

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