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Probabilities, Energy and Time

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ABSTRACT

There is a strange situation in fundamental physics regarding time. Well respected physicists [Julian Barbour for example] point out that quantum mechanical equations are only cyclical with time. But common sense indicates that elapsed time also exists. This is just one disconnect between fundamentals and observations. Observation is based on probabilities, but the values are obscure. Protons, neutrons and electrons are inverse time (E=hv=h/t) but where does time originate? A theory is needed that connects probabilities, energy and time.

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Evidence of Perspective and Probabilities in Physics

Perspective is your position in nature. There is scientific evidence regarding the importance of your viewpoint and observations. Evidence of the principle "observation turns probabilities into certainties" involves light travelling through a polarizer. Polarizers at 90 degrees angles to one another block light. But if a third polarizer is placed between 90 degrees polarizers, light is transmitted through all three. This is explained by probabilities that "reset" every time they are measured. Another example involves the electron—anti-electron pair. They are the same particle if perspective changes from forward time to backward time. Parity (right-handedness and left-handedness) changes and this is simply whether perspective is looking down or up on a spinning particle. Another example is the double-slit experiment. As light passes though double slits from a single source to a screen behind, it interferes and causes wave like dark and light patterns. The other perspective is from one of the slits. If you know (measure) at the slit that the particle went through, the interference pattern disappears; it is a spot on the screen. The principle that explains this: probabilities become certainties when measured. Another example is relativity. There are small time shifts associated with velocity. This makes energy perspective dependent, but is it? Our electromagnetic based senses are limited to large scale events.

Proton-Space Model Original Data

The author uncovered an information pattern in the data below that allows the mass of the neutron, proton, electron, other fundamental particles and field energy to be calculated from probabilities. It led the author to assign information values labelled N to probability = 1/exp(N) where exp is the symbol for the natural number 2.718^exponent N . The energy equation related to N is E=e0*exp(N) where e0 is a constant that allows the energy to be expressed in MeV (million electron volts). Sources of the data are listed.

unifying concepts.xls cell aw48		Particle Data Group energy	Proposed Energy E=eo*exp	IS Hughes Bergstrom Randall
Identifier	N	(Mev)	(Mev)	energy
			e0=2.02e-	(Mev)
0.0986	0.0986			
e neutrinc	0.197	2.00E-06	2.47E-05	3.00E-06
E/M Field	0.296	0.0000272	2.72E-05	
	(3*.0986=.296)			
ELECTRO	10.136	0.51099891	0.511	
mu neutri	10.408	0.19	0.671	less than 0.2
Graviton*		1.75E-26	2.732	
Up Quark	11.432	1.5 to 3	1.867	1.5 to 4.5
vt ?	12.432	18	5.076	less than 35
Down Qua	13.432	3 to 7	13.797	5 to 8.5
Strange q	15.432	95+/-25	101.947	80 to 155
Charmed	17.432	1200+/-90	753.29	1000 to1400
Bottom Q	19.432	4200+/-70	5566.11	4220
Top Quarl	21.432		41128.30	40000
W+,w- bos	22.099	80399	80106.98	81000
Z	22.235	91188	91787.1	91182
HIGGS	22.575	125300	128992.0	105000
* sum of 3 Ns of 10.431+10.408 (2.73/exp(60)=2.4e-26 mev)				
Mw/Mz	Weinberg radians		sin^2 theta	
0.87275	0.509993	0.48817152	0.23831	

Particle Data Comparisons with Model N Values

The above table supports an exponential relationship for energy [1]. N was assigned with the equation N=ln(E/eo) values where E is particle energy in MeV and e0 is 2.025e-5 MeV. The value e0 is derived from the mass of the electron, 0.511 MeV (N=10.136). (The symbol ln( ) means the natural logarithm of ( ) and is the opposite of exp(N)).

The N values above form an easy to identify series. Many N values contain the fractional value xx.431 where 0.431= 1/3+0.0986. The value 0.0986 = ln(3/e), where e is the natural number 2.718.

The Schrodinger Equation

The Schrodinger equation provides sound fundamentals: P=exp(-i*1)*exp(i*1)=1 [2]. . The imaginary number separates 1 into two parts, i.e., -i*i=1. Energy E and time t enter nature through the exponent, (i*1) where 1= Et/H. H is Planck's constant.

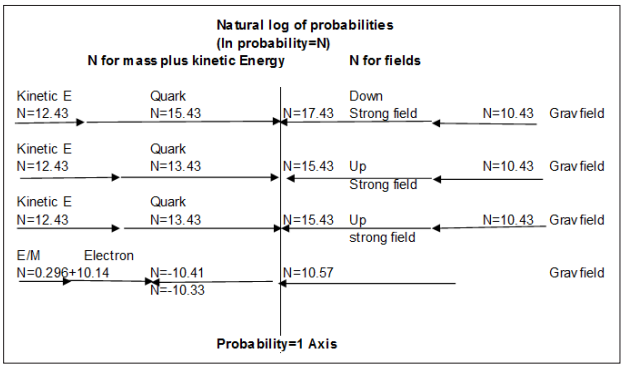
Probabilities are not difficult to understand. For anything to have meaning it must be compared to something of the same type. For example, a word in a language means something because it names something within a language you understand. Probabilities written in numbers mean one outcome compared to all number possibilities. Shannon's definition of information was information = negative natural logarithm P, which means that if P= 1, information= 0 [3]. Information is related to probability; the lower the probability (P) the higher the information content.

The Schrodinger equation is linear and the result P=1 can be composed of components. Below it is used as the basis for a model of the neutron, proton and electron [4]. P=1 is the probability of the proton that has energy components associated with E=eo*exp(N). Schrodinger equation exponents are known as complex conjugates or wave functions. The result of multiplication is referred to as "collapse of the wave function".

Components of P=1 is P= a*b/(c*d)=1. Important information is found in the four sub-component probabilities. They will appear in the proton-space model as an information core (in yellow) for the proton. The component N values are 15.43, 12.43 on the left-hand side of the diagram and 17.43, 10.43 on the right-hand side. These N values originate in the data above.
p=1/exp(15.43)*1/exp(12.43)/(1/exp(17.43)*1/exp(10.43))=1. P will be 1 if 15.43+12.43=17.43+10.43.

Probability=1 is thought to be an initial condition. When sub probabilities are associated with energy it describes an initial condition that separates mass (plus kinetic energy) from equal and opposite field energy. Zero energy is thought to be a second initial condition. Net zero energy indicates that parts come into existence simultaneously and one doesn't have to ask; "where does energy come from?"

The N values in yellow (refer to Proton-space model [4]) add to the value 90 at the bottom of each side of the table. Their associated probability is P=1/exp(90)*1/exp(90). The probabilities return to P=1 if there are exp(180) sets of probabilities. The diagram below is a plot of the N values. Probabilities=1/exp(N). The line in the middle is probability=1. Each of the lines to the right and left are sub probabilities that are also P=1.



The model describes a neutron that was duplicated a huge number of times and decays to the proton, electron and anti-electron neutrino.

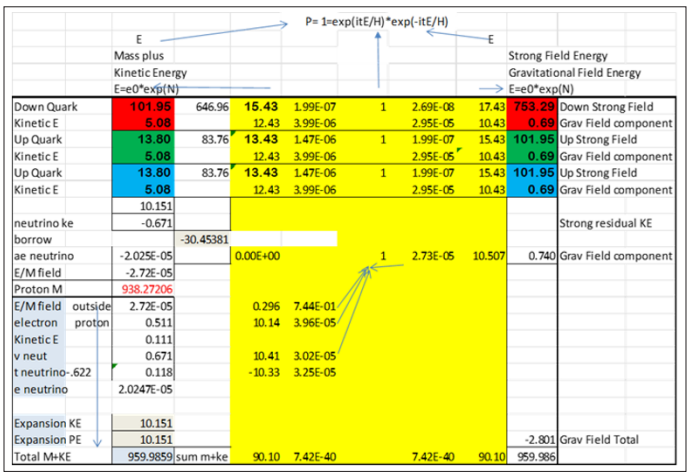
The Proton-Space Model

Probabilities and energy values will be placed in a table below according to a position code. The left-hand side E1=e0*exp(N) for mass and E2 is for kinetic energy. The right-hand computations are for fields. There are two fields E3 and E4. E3 is the strong field that confines its quark E1 and a second field E2 that is a gravitational field component. Mass and kinetic energy E1 and E2 are attracted to fields E3 and E4 according to the code below. Energy is zero overall for this block if mass E1 has kinetic energy E2+(E2+E4-E1-E2)

mass	E1	field1	E3
kinetic energy	E2	field2	E4
mass=E1		field1	E3
Kinetic energy =E2+(E3+E4-E1-E2)		field2	E4

Position Code for Mass, Kinetic Energy and Fields

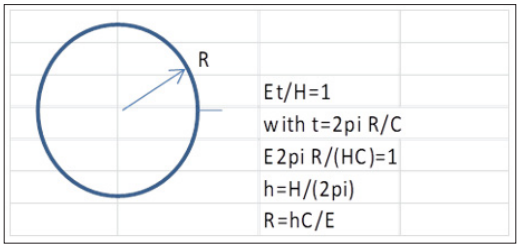
There are four sets of four sub-probabilities in the table below. The table is constructed with each block p=1, overall P=1 and Energy=0 with mass plus kinetic energy equal and opposite to field energy. The exact mass of the proton (938.27206 MeV) is in red on the left-hand side of the table. The electron (0.0511 MeV) and the electromagnetic field energy (2.72e-5 MeV) are the result of a neutron table that "decayed" [5]. Borrowed kinetic creates a deficit associated with weak field energy. They are balanced at the bottom of the table with values labelled "Expansion kinetic energy (KE) and Expansion potential energy (PE)". Their total is conserved. As the universe expands, KE is converted to PE. There are neutrinos and the total for each column is about 960 MeV (equal and opposite).



Proton-Space Model
Fundamental Distance and Time

No one can doubt the famous Einstein relativity equation E^2=M^2+(PC)^2 where PC is momentum. This equation receives values from the left-hand side of the proton model. The right-hand side of the proton model is total field energy, also E^2 but equal and opposite. The proton mass should not be separated from the other components that add to the bottom-line energy, 960 MeV. It is a proton-space model, especially because the proton has initial kinetic and potential energy [4].

The total gravitational field energy on the right-hand side = -0.69+ -0.69+ -0.69+ -0.740 = -2.801 MeV. The author's approach to quantum gravity is not generally known [Appendix] but it is based on the value E= 2.801 MeV [6]. In this theory, time and space are defined below with the equation R=hC/E where E = gravitational field.



Derivation of Equation R=Hc/E from Schrodinger Conjugates Et/H=1

H= Planck's constant= 4.14e-21 MeV-second. H/(2pi)=h is Planck's reduced constant [Wiki].

M=mass (energy) of the particle. If the particle is moving fast relativistic mass is m/gamma.

E=the attractive field energy that causes a particle with kinetic energy to move in a circle.

Et/H=1 with t= 2pi r/C leads to r= HC/(2pi)/E= hC/E. r= probabilistic position of the quantum particle.

According to the proton-space model, all protons are identical, defined by the proton model and all contain the gravitational field 2.801 MeV. The gravitational energy field = 2.801 MeV is special because it defines time and space. R= quantum circle radius= HC/2pi=1.973e-13/2.8011=7.045e-14 meters. The gravitational constant G can be calculated from this radius (Appendix).

Identify the radius and time for the gravitational orbit with 2.801 MeV
Fundamental radius=hC/E=1.97e-13/2.801=7.04e-14 meters
Fundamental time= 7.04e-14*2*pi()/3e8=1.47e-21 seconds

Fundamental time repeat rate = 1.47e-21 seconds. It represents elapsed time as it counts forward and is the basis of the shift below.

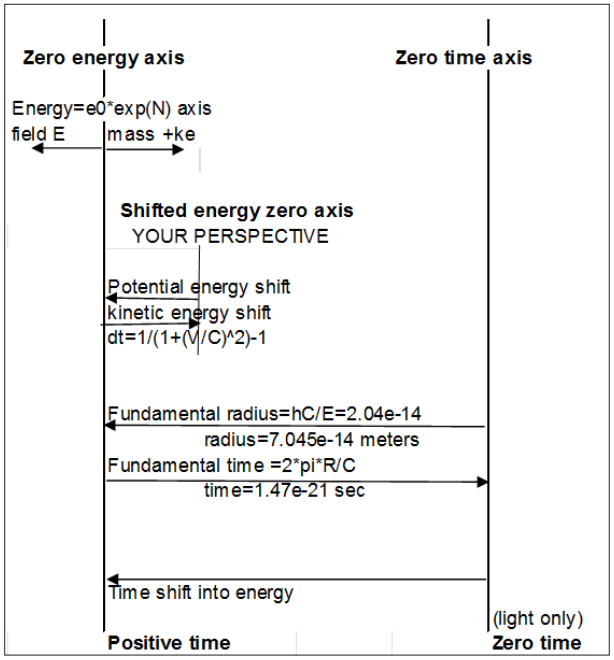
Shift to the Energy Axis (Refer to the Diagram Below)

There is a value time=0 for the universe. A light wave exists at **Zero time**. The diagram below shows that time shifts to a line labelled the **Zero energy axis**. This 1.47e-21 second shift is associated with field energy E=2.801 MeV. Arrows pointing to the left are fields or potential energy. Field energy creates a fundamental radius =7.045e-14 meters. There is a complementary arrow pointing to the right labelled fundamental time labelled 1.47e-21 seconds.

Everything is on a Zero energy axis. Mass +kinetic energy is to the right of zero and fields and potential energy are to the left of zero energy. Your energy perspective was initiated when time was shifted for you, and your observations involve energy and probability based on E=e0*exp(N). Everything is also on a probability 1 axis. The probabilities multiply to P=1 but there are many sub-probabilities that can take on different values.

Perspective Shifts

The proton model indicates that energy is zero for the universe from all perspectives. Your perspective is located at the zero-energy line when your velocity is zero. To the right of zero, the diagram below shows a line labelled "shifted zero-energy axis". Your perspective has velocity, and you can calculate dt=1/(1-(v/c)^2)^0.5)-1 from relativity equations. But there is something that is not observed. The model indicates there is a complementary shift in probabilities and energy that balances energy to zero overall. It is labelled potential energy, but it is not observable. The energy that was expended to gain velocity came from somewhere although there might be energy transitions or delays involved. Zero energy accounting can't be fooled.



Further evidence of the role of observation and underlying probabilities. EPR experiments have determined that there are probabilistic connections across large distances. This would be expected with the proton-space diagrams presented above. The axis for zero time above for light links everything together. The system of probabilities is whole with P=1 and energy=0 overall. Observers can be very remote from structures like stars and galaxies. Our body/mind is an example of a structure constructed from these probabilities [7-9]. Overall, everything is simple; there are just a lot of duplicated parts and possibilities.

Relative Motion

Some would point out that special relativity indicates that simultaneity is dependent on motion and therefore, since motion is relative, time is relative. They use the Lorentz transformation to calculate how time is changed by velocity relative to some other particle. If velocity is relative, there is tension between this statement and kinetic energy. Velocity is an incomplete quantity and kinetic energy is a better choice for comparisons. According to the proton-space model particles conserve Potential Energy + Kinetic Energy = 20.3 MeV/proton. The first law of thermodynamics does not allow destruction of energy and is consistent with the zero-energy base for the proton space model. But observer centered nature provides a new understanding of space and time. Everything is based on probabilities and observers create their own perspective. We are walking around in energy, time and space that has expanded from the quantum level and obeys probability level rules. Nature seems a little weird because we have observed (measured) and learned about nature from the "our perspective" line in the diagram above. The twin paradox is another example of observer centrality. Each twin is an observer. Each can tell that there is relative motion and can calculate dt (the incremental time dilation associated with relativity). But nature's zero energy cannot be violated. Time dilation is compensated by probabilities and potential energy that are not observed. The system allows them to stand side by side although one is younger after his/her trip.

Conclusion

Nature is fundamentally probabilistic with overall probability one. There is an opposite field energy associated with mass and

kinetic energy, indicating that energy is zero overall. Time cycles at the quantum level and counts forward. The fundamental time increment 1.47e-21 sec is defined by a field in the proton-space model associated with gravity. Observation is also fundamental. Our perspective of energy and probability events appears to be shifted from zero-time associated with light. Velocity shifts time locally but there are unobserved compensating effects. Conservation of zero energy (also the first law of thermodynamics) holds for cosmology [10]. Space and time around us is defined by gravity at the quantum scale (the proton model is at the quantum scale) but is reduced to a low long range energy by a probability based coupling constant (1/exp(90)). Expansion models start with exp(180) protons that each has 10.15 MeV of kinetic energy being converted to gravitational potential energy over elapsed time. The proton-space model's energy values have been demonstrated to underlie a unified theory and enable the correlation of data related to cosmology, high energy physics and some aspects of biology [5, 11, 12].

Appendix Calculating the Gravitational Constant from Potential Energy and Radius

A coupling constant related to the probabilities in the text (1/exp(90)) connect gravity and quantum gravity [6]. The quantum level proton model provides values that allow the gravitational constant to be calculated. G=hC/Mm*(1/exp(90)) determines G. An alternate calculation uses the relationship hC=E*r. E's value is 10.15+10.15=20.3 MeV shown in the bottom left-hand side of the proton model and r is related to the proton model's gravitational field energy 2.801 MeV. The value hC=1.973e-13 MeV-meter.

Radius r(meters)= hC/E=1.973e-13 MeV-m/2.801 MeV= 7.045e-14 meters

G=hC/Mm*1/exp(90)= E*r/MM*(1/exp(90)) where M=1.67e-27 Kg.

G= 20.3 MeV* 7.045e-14 meters/1.67e-27^2 Kg^2*1.602e-13*(1/exp(90))

G=6.678e-11 Nt m^2/Kg^2

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