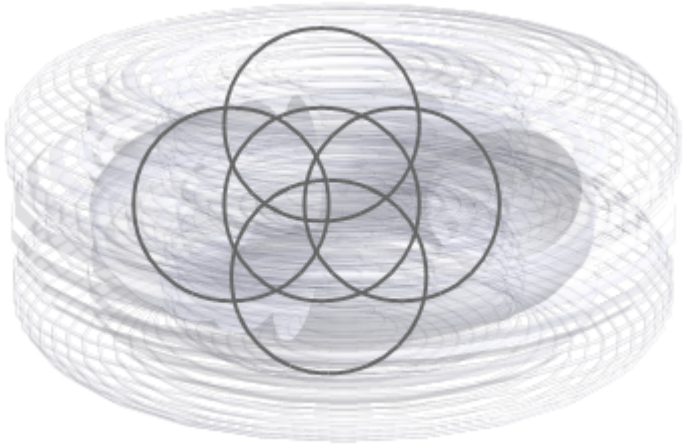
Essay Addenda on

The Evolution of the Particle



and a

Model for Hypothetical Matter

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Draft 1.1 - 11/13/2011

Regarding the Scientific Method and Theory

“A model that is intended as a means, is just as legitimate as another when achieving the same ends whether it is based on hypothesis or speculation. Some things are simply not testable; yet our intuition leads us eventually to the means of their discovery. We as humans cannot be 'all seeing', but can have a glimpse of what we believe is a truth. The paradigms we forge generally lead us to the ends we seek.”
- OKD

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I- Preface:

This papers intent is in demonstrating a concrete application of the theory of *Relative Gravity* . It applies *RG* with respect to current atomic theory. RG can be considered observations or interpretations of the mechanics of nature; and which were crafted in the form of abstract extensions of current scientific laws and accepted theory.

The paper consists of two main areas of focus. These are *a*- in looking at the atomic particle in terms of an, and in proposing its, evolutionary process as a generic or fundamental manifold, and *b*- applying this conceptually to the known elements through a model on hypothetical matter. Both areas can be considered separate within their own scope but which have a shared focus.

There are an extensive number of, and subsequent derivatives of theory on particles already. They are all well accepted by the physics community.

Yet *wave particle duality* can have bias in its own interpretation starting with Steven Weinberg, Paul Dirac,Werner Heisenberg,Pauil, Hund , Aufbau' and many other of its pioneers in scientific theory. For the known elements, pioneers like Hennig Brand, Johann Dobereiner, A.E.Beguyer de Chancourtois, John Newland, Dmitri Mendeleev and Glenn Seaborg can be considered the founding fathers of the *Periodic Table of the Elements or PTE*.

Given actually an extensive history of known as well as unknown contributors to theory, it is perfectly within reason to assume that the foundations of science in of itself will never be complete. *RG's* basic theory is considered object oriented. In this manner, theory as abstract principles can be realized in concrete examples through their polymorphism. In this manner, RG's theory intends a normalized framework which adopts symmetry for scientific observations.

Based on RG's framework, this paper's theory on particle evolution assumes to resolve bias's between well founded views for String Theory, Quantum Mechanics and Relativity. This is by offering extensions on their perspectives of the same thing. That is, the basis behind the very nature of the universe.

The paper's intent is not to further prove any one of these followings as already assuming their legitimacy through a sustainable history. This applies as well to the value of the PTE in how this paper proposes a hypothetical model for calculating atomic weights and electron counts; and that is not molar based. Basically, the paper simply leverages others work through interpretation based on RG's theory.

For science, a more clearer explanation of phenomenon is always due. This paper is intended to lend in a sustainable direction of theory for its goal.

> *"Every truth passes through three stages before it is recognized. In the first it is ridiculed, in the second it is opposed, in the third it is regarded as self-evident"* - **Arthur Schopenhauer**

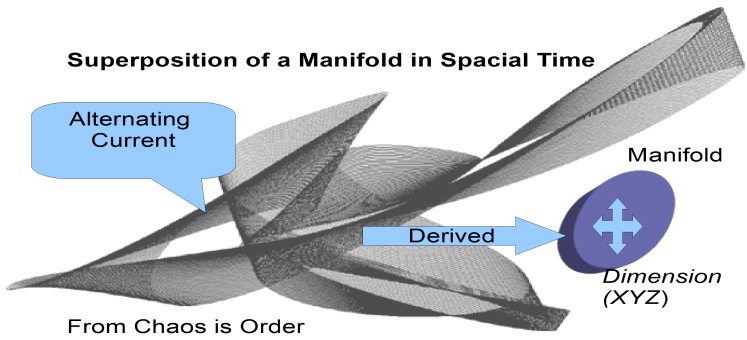
II- Summary:

When the fundamental universe is seen as alternating currents, for *Relative Gravity 'RG',* the relationship of dark and light matter is thought of as an impedance. This is where particles to galaxies, or any other body between, are first viewed as manifolds having common and inherent properties of symmetry.

> *Particles can be thought to have opposite charge, harmonics of vectors for strings; and with wavelengths subject to distortion.* This is seen possible in *RG* without contradicting Bohr, Pauli, Aufbau and others in view.
>
> *In their context of RG's 'spacial time', bodies are considered skew-able and cumulative with respect to others. Relative Gravity is viewed as their fundamental relationship through superposition.*

The particle from the standpoint of *RG*, considered to be the constituents of matter itself, is viewed somewhat similar but yet different than accepted in atomic theory.

In fact, for *RG*, even strings from string theory are just thought of as some form of a *vector*.



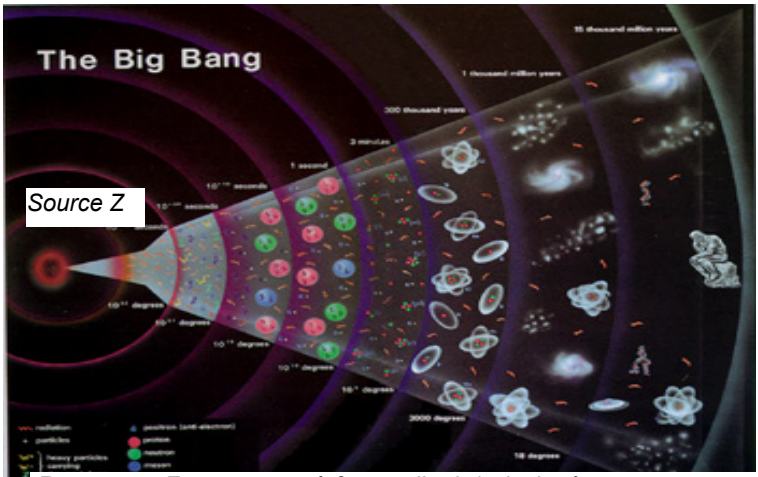
> For string theories or other, seen, as a current, if one were to coalesce with instances of itself or others, in an event of superposition, a manifold in a spacial time can be expressed as a spacial manifold. In fact our early universe can be seen in a like way if observing its point *XYZ* as a composite. In other words, the way we view constellations from Earth.

Establishing what is called a spacial time, in RG's paradigm, a manifold is thought to be an event of some dimensional expression *'dimension XYZ'*. It has properties that are considered conserved through polymorphism and inheritance in their expression.

> Regardless of how fundamental or sub-atomic a particle can be thought of, for *RG,* it must meet the requirements of being an *ideal field* consisting of a *Uniform Relative Force (URf)* as a m*anifold Z.* This is thought to have a measure of *dimension* and *time* based on some *manifold [Energy/Time].*

For RG, dimension and time are allowed to have infinite bounds by default. On the surface, this somewhat contradicts the view of the *Big Bang.*

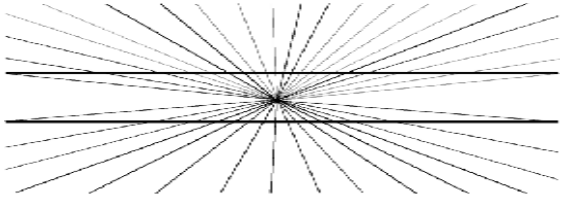
For example, it removes the mystery of where, somehow a singularity that contains everything necessary in order to create a universe in an inertial frame of reference, is to exist with an absence of space and time; and then described as Steven Weinberg's first three minutes of the Big Bang, consequent stages of evolution are thought to occur as a process of some mystical causality.



Resonance Zr >>>--------- { fq=amplitude/velocity }----------.>

For RG there is the '*Dimension of Time'.* This allows a singularity to be simply another isolated system consisting of some *manifold Z.* As a composite, it further is considered to explain superposition with vectors X,Y as being earlier incidences of Z . In the context of its existence as an *inertial frame of reference,* its is expressed as an ideal field of *uniform relative force*, or '*Urf*' .

RG's relative force *Rf* is seen as the relationship of alternating currents for any number of vectors that make up a *manifold Z.*

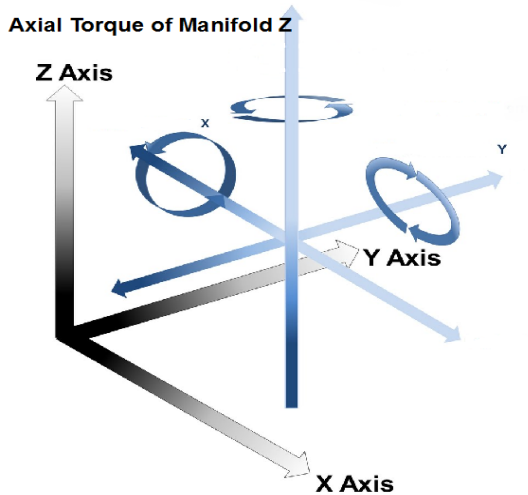


Consequently, the property of *force* must first be thought of as *relative and hierarchical in context*.

III- The Notion of Torque

RG's paradigm allows latitude for theory. Being relative, an event of force can be causal or a-causal in origin. That is, it can be random but have properties of symmetry as a relative force.

In a more a-priori state, and to suit an event of superposition in some spacial time, *torque* can be construed as a fundamental property shared between fundamental vectors XY and Z, that can explain the basis of manifold as a relative force *Rf.*



Torque can be considered an alternating current of a manifolds axis; and thought to derive vectors for a field defined as a uniform relative force, *Urf*.

Intended, as a matter of it's axis's torque, a manifold can be defined geometrically within an area described as $4\pi r^2$ in a spacial time.

That is, for particle theory here, the same principles are to apply to its most fundamental expression before building an atom; or in further assuming atomic bonding to yield molecules.

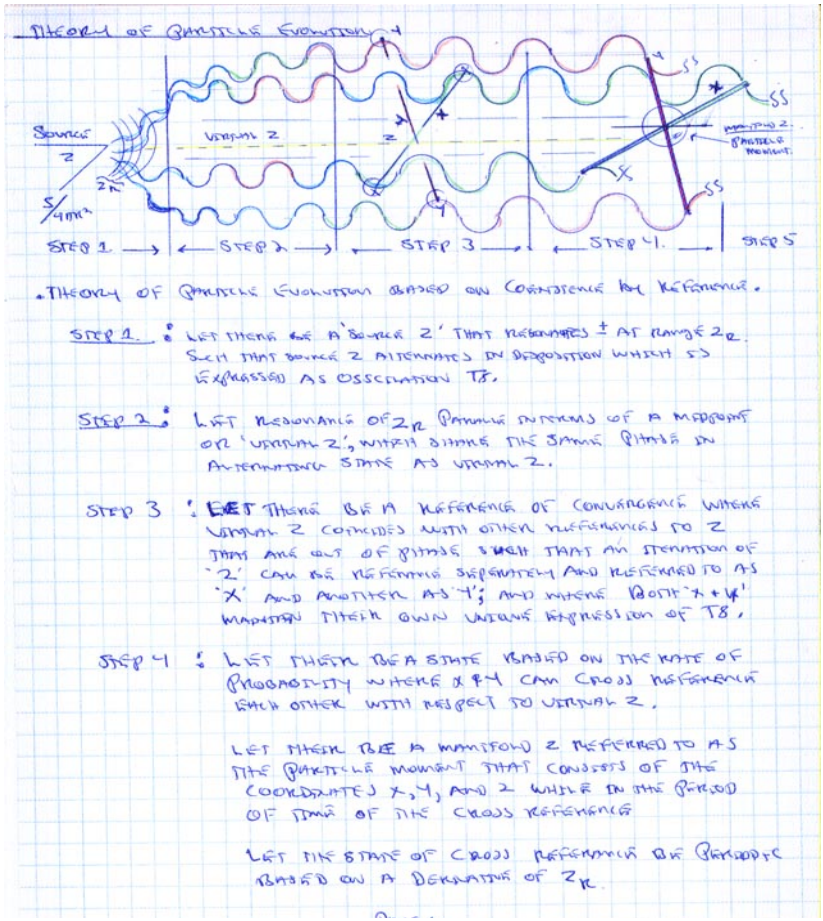
This is further to be consistent with the linear nature of the atomic weight spectrum for the Periodic Table of the Elements *PTE* as demonstrated later in the model on hypothetical matter. Each element can actually be derived as a model of a *Urf.* In terms of *atomic weight,* progressions, based on levels of torque can be marked as some form of a *consequent evolution.* That is, from a previous expression of existence can be a-causal as an event, yet derive a natural order.

Construed here for the *PTE*, coordinates for a spacial expression (X+Y+Z), as *dimension XYZ*, are seen to express unique spectrum' s as even other spectrum's.

IV- A Model for the Fundamental Particle

As all bodies in *RG* are first viewed as manifolds, and thought to have a basis for volition based on alternating currents of one form or another, fundamental particle evolution is proposed based on the assumption of a spacial manifold.

A *resonance Zr* is thought to coincide with itself. As a spacial time this is considered through a number of hypothetical steps in its evolution. Each step is considered to have a unique realm of context, or spacial time, for maintaining the laws of conservation in its properties.



As a syncopated superposition of vectors *X,Y,Z* to n, as an event, is thought of as some *coincident order* in its own unique spacial time: eg,- like the consequent evolution of an inertial frame of reference. Energy, such as measured in joules can be considered in a temporary state or quiescence in spacial time of some natural order.

Theoretical Steps of Particle Evolution

The origins for a hypothetical particle, as a manifold, are first considered a *source Z* of some alternating current. The manifold is to represent its current's consequent evolution through its resonances as *vector Zr*.

Resonance as an expression of Relative Time

1- Period of Resonance: Because reference frame **'B'** can exist, that for every period of expression of its existence, there is a Period **(f)** as a spacial time for the existence of **B** with respect to **A.**

2- Spectrum of Resonance: Various expressions of *Relative Gravity* can therefore be expressed during the transitions from A' state to B; or within the spectrum of resonance that occurs as expressed by B with respect to A.

3-Resonance Frequency: Consequently, during when 'B' exists as a constant expression of A, the transition between the two known states of *A and B* can be expressed as the movement of 'to and fro'.

An average of E/T can be achieved likewise between states A and B via $2\pi/(E_f^{\infty}/T_f^{\infty})$; or in other words, a resonance is expressed by way of the 'to/fro' or a sign wave.

4- **Resonance Period:** The phenomenon is "inconstant", or as much a constant as the root mean square of A that yields B in the first place; and that this is subject to 'A's *conveyance of force through inheritance*. This is considered subject to some coincident order. Our relative time therefore is considered that constant.

5- Resonance Inheritance based on the coincident order of force, 'B' can be established based on A, and through the inheritance of properties, like 'A', can have its own coincident relationship with other forces as from another entity of (Ef/Tf).

6**- Resilience at Known States can infer Spectra for E/T as a single entity**

7- Resonance Mean and Resonance Spread: area * (mean energy) = frequency * Amplitude and therefore can be construed to express the frequency and amplitude of a radii.

A Model for Particle Evolution

As a model, particle evolution is described as seven (7) theoretical steps which follow.

They are not intended to be testable here. Each step, in representing more of a speculation than a hypothesis, assumes its previous step.

The particle is referred to as the *particle moment* '*Pm'*. It is represented as a *manifold Z* which itself represents a harmonic of some *resonance* of Zr.

That is, it exists as an isolated system, noted as δ', within a given spacial time as a *resonance Zr.*

This is while assuming that the manifold demonstrates evolutionary consequences in the step's progression based on the carry forward of properties through polymorphism.

Step 1- Let there be a current of s*ource Z* that resonates ± at range *Zr* such that *source Z* alternates in disposition that is marked by an oscillation δT. In combination of range Zr, oscillation δT defines *resonance Zr.*

Resonance Zr (fq) = amplitude of source Z / distance

Assumptions of step 1:

On convergence and in the conservation of elementary particle properties:

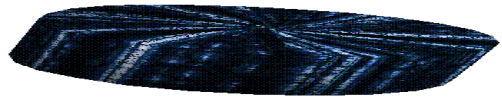
1- Let 'Zδ be a band in a strata of *linear time*, where exists Z^{∞} bands of fq within the spectrum of ZΔ ; and where expressed spectrum's can coexist as $Z\Delta^{\infty}$ in convergences.

Linear time, represented as a single dimension, is considered a derivative of all time and all dimension. This allows many of the same derivatives of the same time and dimension. Any derivative therefore can likewise cross reference any other derivative. Consequently, it is plausible that *vector Z* can cross reference another point of *Z* to derive an *X* and *Y*.

2- Unique 'Zδ' can be represented as the relationship of source Z and resonance Zr. This relationship is considered a step in a *natural order* where provided is the equivalent relative force *Rf* consisting of amplitude and frequency.

3- The probability for a unique 'Zδ' to exist as a unique source Z with resonance Zr is based on the equivalence of occurrence and the rate of probability.

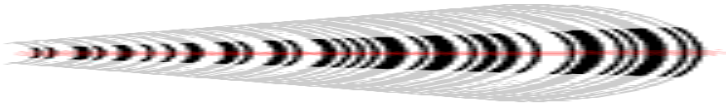
Step 2- Let resonance Zr parallel as X and Y in terms of a midpoint or 'virtual Z' ; and where in sharing the same alternating phases of Zr (+ , -).



Sagital view of *resonance Zr*

Assumptions of step 2:

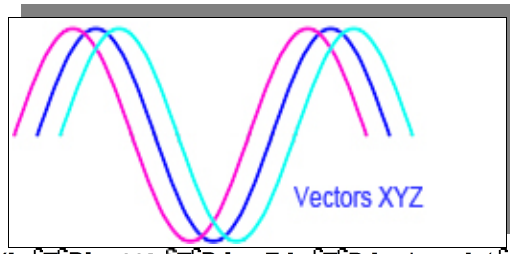
The expression of *resonance Zr* with respect to virtual Z is considered subject to the *inverse square law*. The sum of *Zr* is considered a *relative force* for expressing the volition of *natural order* for *source Z*.



Parallels are considered to be formed with respect to the *inverse square law.*

Step 3- Let there be a reference of convergence where virtual Z coincides with other references to the isolated system ZẟT that are out of phase such that an iteration of 'Z' can be referenced separately as 'X'; and another as 'Y'; and where both 'X and Y' maintain their own unique expressions of spacial time ẟT as isolated systems.

As a vector, resonance Zr is considered a spectra of spectrum's that express alternating phases.



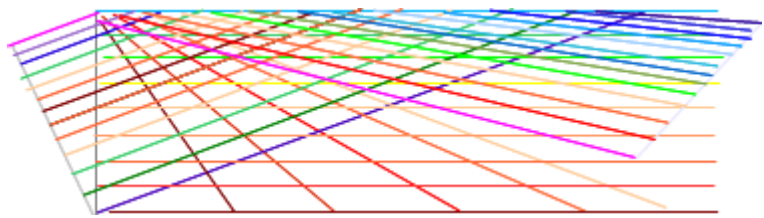
Hence: X[ẟTẟD] ≈ Y [ẟTẟD] ≈ Z [ẟTẟD] where [(ẟ1 ≈ ẟ n)]

Assumptions of Step3:

For probability, deltas of vectors can be derived based on the number of convergences described as:

The (# of convergences (# of convergences -1)) in combinations of 'Y and Y' with respect to the number of combinations of the # of parallel spectrum's of ZΔ.

Expressed spectrum's of manifolds, deltas can coexist within the spectrum of ZΔ where expressed spectrum's can coexist as Δ^{∞} in convergences.

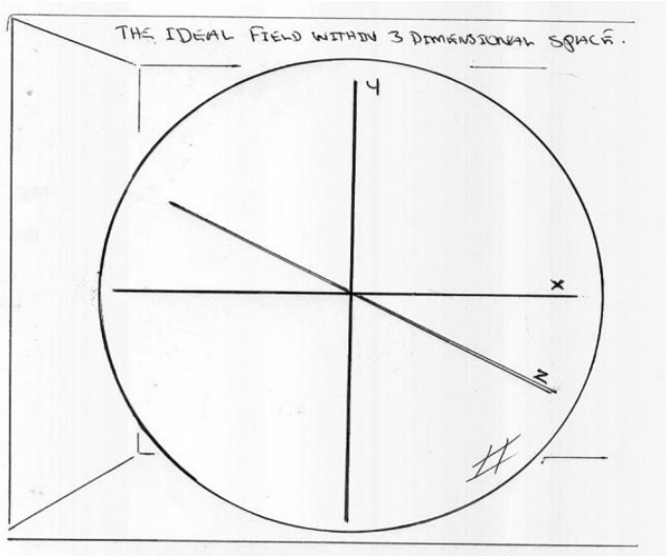


Spectrum's can intersect other spectrum's which then can yield others.

Step 3 can be considered expressions of coincident order for both *X* and *Y* uniquely. This is with respect to their relationship with *Z*. Their states of ẟTẟD are considered unique spacial times.

Step 4- Let there be a state based on the rate of probability where *X & Y* can cross reference each other with respect to *Z*.

Let there be a *manifold Z* referred to as the *Particle Moment PM* that at a minimum consists of the coordinates 'XY, and Z while during the time of their cross reference.



Assumptions of Step 4:

From step 3, spectrum's are considered to be created by other spectrum's. To represent a state of torque range in the cross reference of *XY* and *Z*, the products of an expressed spectrum are seen to be put in an orderly manner by other spectrum's which provide context.

Linear time of 'Z⃝' can express the relationship of vectors 'X⃝ and Y⃝' based on points of convergence. This is where the perception, as in mirrors of itself as an impedance through symmetry, *of XYZ 's axis* is like a manifold in spacial time.

Seen, manifold Z, as the *particle moment,* represents the sum of X+Y+Z . As a state of torque in spacial time, the sum total force of the *Pm* must equate to *net 0.* This is in terms of its *relative equilibrium* between its ' inner and outer relativity'. That is, in order to express a *relative time* for it to exist in a state of quiescence: eg,- like how a soap bubble lasts, as well as a solar system.

Noted, deltas of vectors can be derived based on the (# of convergences (# of convergences -1)) in combinations of *'Y and Y'* with respect to the number of combinations of the # of parallel spectrum's of Z⃤.

In Consideration of World Lines

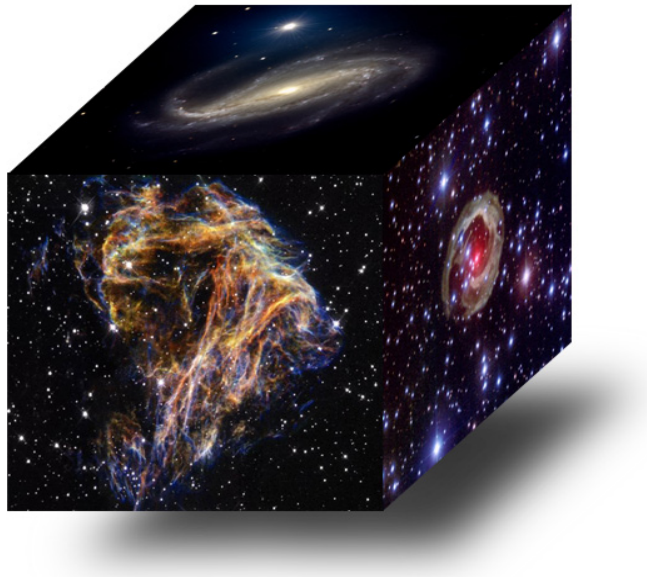
With respect to the spectra of Z$\aleph_0$, as points in a line are considered arbitrary, less how they define the line, between any two spaced points, is an infinite number of points for convergence.

When points have a context, for example dimension *D1, D2, D3*, . . . Dn, they can still be viewed as arbitrary less the context that they represent.

In other words, from the standpoint of *D3, D2* is considered equivalent to *D1* from the standpoint of *D2*. That is, the third dimension requires the second which requires the first.

What differentiates *D2* is with respect to *D1*, and *D3*. And within the line between *D1* to *D3*, the points can be represented as *D1*,(D^{∞}) , *D2*, (D^{∞}) , *D3*, . . . Dn.

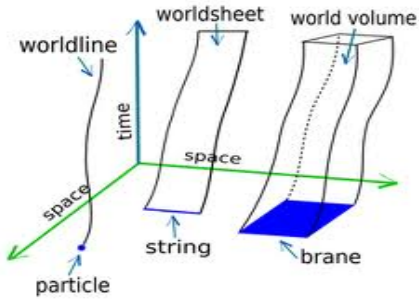
Thus *D1* as being any part of (D^{∞}) can be related to *D3* as also being any part of (D^{∞}) without the context of *D2*.



Consider, if viewing a cube, one does not have to view a plane in the cube in order to view a line that makes up one its edges. But in order to view a cube, it is a matter of context represented as *D1, D2*, and *D3*.

Step 5 - The Differentiation of a Particle:

For RG, 'dimension(XYZ) represents a geometrical expression for a spacial time. It is to exist as an abstract body. As a reference frame, it is referred to as a realm of *context TD*. This is so to be able to represent *manifolds* of *[E/Tz]*.' For spacial manifolds, linear time Z can consist of a matrix of an infinite number of world lines. Further, each may be considered infinite in range.



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Such threads upon convergence, with respect to a reference between them, provides an expression of *XYZ* where form is a matter of perspective as a dimension of XYZ in a state of quiescence:.

As step 5' s foundat6ion, steps 1-4 address hypothetical stages in the transformation of energy. This is in terms of *consequent evolutions* of a natural order for a *source Z* with respect to its *world line* or thread, resonance as *Zr*.

In Review:

Steps 1-4 are references to linear time, and where expressed as a derivative of other references to time.

In each step , 1– 4, energy is expressed as a relative force that is in a specific step's context. Energy can be considered transformed with respect to a reference to time between steps.

The *mean* of *virtual Z* , as a scalar for the steps, can be viewed as a relative force that expresses consequent evolution from *source Z* to *manifold Z*.

Natural order, by default, is viewed in how one category of existence, how a *Delta Phenomenon,* expresses itself though symmetry with other parts of a greater one that is expressed as ' $\Delta = (\delta 1 \approx \delta 2 \approx \delta 3 \approx \delta^{\infty})$ '.

Time and dimension are considered to be derived within the dimension of time. In *RG,* the *dimension of time* is not considered a single dimension but instead consisting of the relationship of infinite time and infinite dimension.

Force as a Continuum

As the relationship of infinite time and infinite dimension is considered perpetual, the unification of forces is seen as a normalized relative force; or those properties which are shared between forces.

Any expression in polymorphism of force, when viewed as a singularity or otherwise, is considered to be derived within its own spacial time from other things. As a *spacial expression of coincident order,* it is considered a derivative from the relationship of other reference frames and their spacial times.

In step 3, for a *spacial expression of coincident order*, harmonics are themselves considered spacial. As is the case for radiation, coordinates for a spacial expression (X+Y+Z) are thought to be able to express *unique spectrum's* in terms of other spectrum's.

When considering an inheritance factor for a basis of polymorphism, in step 4, *manifold Z*, consisting of the convergences of *'X'* and *'Y'* with respect to virtual Z, is subject to the *relative force* in step 1 of *source Z* with respect to *resonance Zr*.

The expression is seen like a synthesis of relative forces within an area of the coincident order in a state of quiescence. This could be construed as an *atomic mass spectrum* when applied to the construction of an atom.

Derivatives of *Dimension XYZ*

In step 5, convergence of XYZ can occur based on derivatives of phases enabling a dimension XYZ. Disposition is represented as valences. Consider this compared to Newton's view: "The momentum of an isolated system is considered constant with respect to like systems. That is, he views that the vector sum of the moment mv of all the objects of a system cannot be changed by interactions within the system".

Given this constraint, let there be *multiple frames of reference* for particles based on the phases of *X , Y and Z.* that are uniquely based on inheritance.

Dimension of XYZ

1- X+ Y+ Z+
2- X+ Y+ Z-
3- X+ Y- Z+
4- X+ Y- Z-
5- X- Y+ Z+
6- X- Y+ Z-
7- X- Y- Z+
8- X- Y- Z-

Let Coordinates X, Y and Z represent opposite states (+ , -) of unique phase for *resonant Zr* at amplitude *Source Z*. Hence the characteristics of *XYZ* as a particle are subject to the disposition of phase (+ , -) with respect to X , Y and Z as valances.

Let the state of particles relative to each other be represented as more positive, positive, less positive, less negative, negative and more negative with respect to their frame of reference.

Note: Each reference frame with respect to another provides a basis for a spacial time between the two.

Assumptions of Step 5:

a- The particle can be considered as in *its inertial frame of reference*. Its event can occur perpetually based on coordinates X,Y and Z. In each case , for *RG* there is a *relative equilibrium* in a spacial manifold between perpetually related forces of *X, Y* and *Z*.

b-When viewed *as dimension (XYZ),* the abstract particle demonstrates poles.

As valances, this also simplifies the notion of orientation and alignment of an axis. In other words, even for an atom.

c- As dimension XYZ, the state of relative equilibrium can be based on the sum of attracting and repelling forces. That is:

In a case of 'X+ Y+ Z+ ' and 'X- Y- Z-', if to represent repelling forces, then relative equilibrium is thought to be expressed as other forces around the event that counter balance it.

In all other cases of dimension(XYZ) , if to represent attracting forces, *relative equilibrium* can be based on a multiple to one coordinates – where range of relative force from ++- to --+ . With respect to external relative forces around the event, ranges ++- to --+ are viewed as a unique band in a spectrum of relative forces.

d- Let forces X, Y and Z describe a field , the particle moment Pm, as E/4piR2 , where it can be considered alternating in phase based on the phases of X, Y and Z in points of quiescence.

As points of quiescence, a particle moment, between relative forces enable an expression of time. Such expressions can be derived in wavelengths as is demonstrated in a transference cycle such as between heat and cold. Consequently, as a unit of a vector, time can be established through wavelengths.

e- Where expressed spectrum's can coexist as (derivatives of infinity) Δ^{∞} , let there be a periodic expression of the particle moment that represents both states (+ , -) of phase where an expression of the particle can range in charge from more positive to more negative, with respect to particles of similar definition in convergences of Z^{∞} bands within the spectrum of $Z\Delta$. In retrospect:

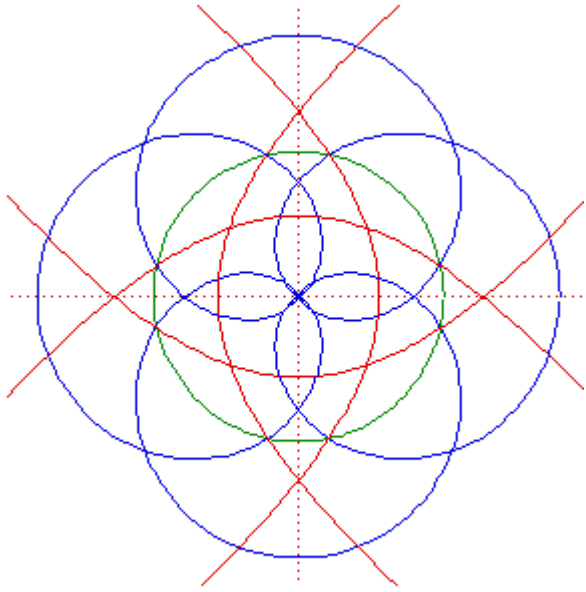
For a particle moment, there is no smallest nor largest and charge can range in amplitude and frequency based on '8 dimensions of dimension(XYZ) * total number of possible particles) 2) -1' derived particle types.

Manifolds as Isolated Systems in step 5

In *RG*, **a**s time and dimension are considered derived from other times and dimensions, isolated systems can be thought as hierarchical where demonstrating an inheritance of properties.

Envisioned, a spectrum of unique harmonics of an isolated system can define a *manifold Z.* As an example, this is where *Uniform Relative Force* as *dimension(XYZ)* / $4\pi r^2$ can be imagined as sinusoidal spirals in net effect.

Sinusoidal Spirals



Inverse Curve (wrt green circle)

***URf* = 4πr2√ [ΣRF)]**

Noted:

In RG, harmonics are viewed as a cyclic expression based on frequency and amplitude.

As in the case of the atomic mass spectrum, spacial harmonics are considered the sum of all (Fq,Ampl) for the given spacial expression.

Step 6: Particle Momentum and Conservation of Energy:

For Step 6, additional frames of reference are considered inherited from *virtual(Z)* and *resonance (Zr)*.

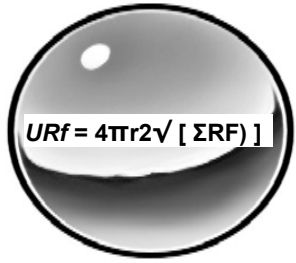
This is based on the convergence of Z^{∞} bands within the spectrum of Z_{Δ} but seen as in combinations of the eight (8) relational states in relative equilibrium that were noted in step 5.

The Particle Moment

The origin's of a manifold are considered first, a-causal; and second, as a fundamental particle, intended seemingly parallel in properties, or in a symmetrical in manner with others. This is where variances can be viewed as minimal, significant, none, or perceived in expression.

The *particle,* according to Step 5, based on *property inheritance* can be represented as Step 4's manifold. Properties of *torque* are to be represented in at least 8 relational states.

Manifold Z



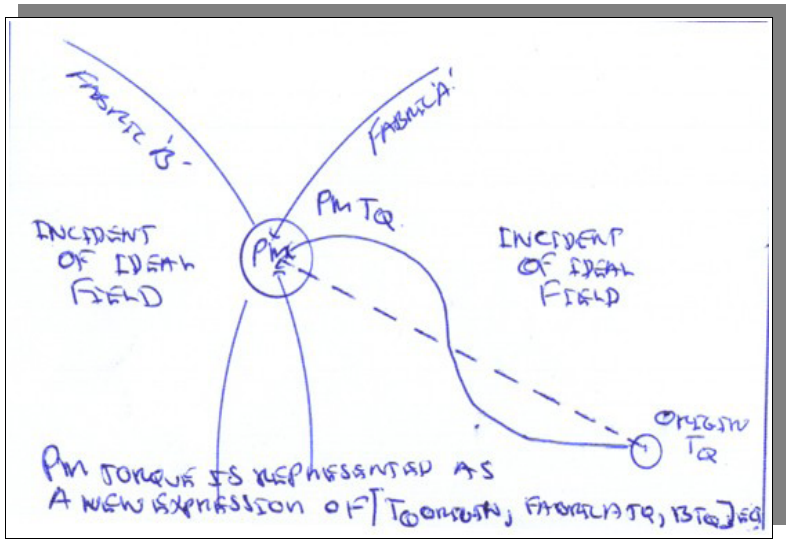
Uniform Relative Force - *URF*

As a Manifold, believed, a *URf* can express a complete harmonic spectrum through dispersion of 8 relational states of *dimension(XYZ)* in the relationship of *virtual(Z)* and *resonance(Z)*.

A *URf* with a total area force of $4\pi r^2\sqrt{[\Sigma RF)}$], represents an amplitude of *source(Z)*, and a resonant frequency thought of as r*esonance(Zr)* for the period of duration. This can be envisioned as a moment of convergence of *dimension(XYZ)*.

As a Particle, a manifold's *vectors XYZ* are imagined as rotating where expressing a relative force envisioned like a *torque*. This is based on the 8 relational states in periodic occurrence. Hence the particle if viewed as a field can be described as:

URf of *dimension(XYZ)* / $4\pi r^2$, representing a uniform relative force , has a field surface that is subject to 8 relational states of dimension XYZ. This is thought to provide a tunnel affect: eg-, the *'probability that a particle of given potential energy can penetrate a finite barrier of higher potential'*.



Speculated, the behavior of the *particle moment Pm* is based on the inherent torque within the axis of a manifold.

This is equivalent, to say, holding an object in orbit around an axis at a given distance with in a 3 dimensional field that can be interpreted as Tq for torque.

The Particle Moment (*Pm*) is intended to express the sum of coincidences of vectors which are in phase with another.

The 'moment' refers to the period of observation, *relative or periodic time T,* of the existence for the expression only of the particle in question.

As a charged field, the relational states can be considered demodulated and modulated depending on point of reference.

This is where angular momentum is assumed to remain constant in both magnitude and direction.

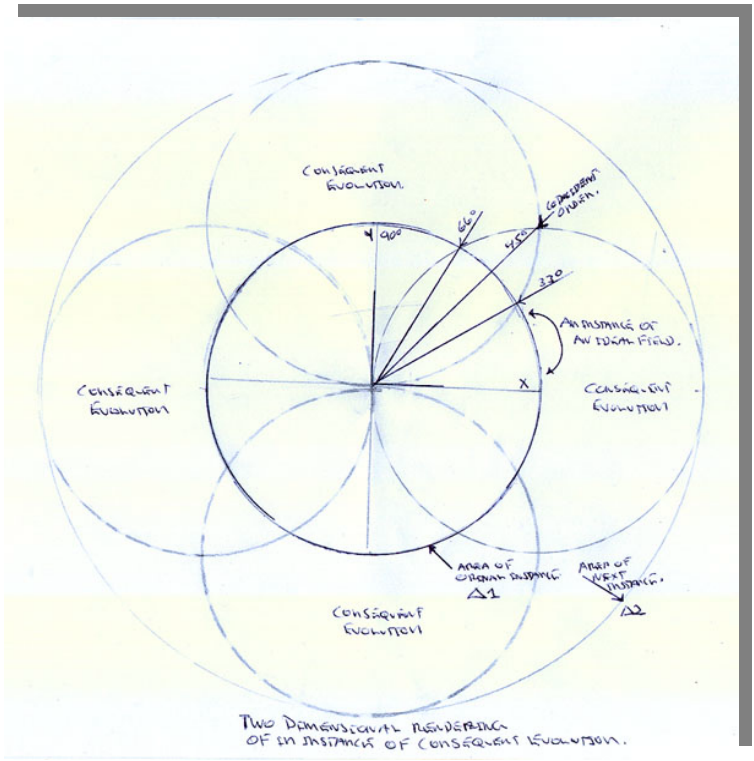
Step 7: A New Frame of Reference and the Conservation of Natural Symmetries:

The laws of physics should be the same regardless of changes of position or of orientation in space.

Relative Gravity's law IV intends that consequent evolution can be expressed in terms of the 'equivalence in result' where, in the case of the manifold, points of quiescence enable an expression of time and dimension.

Consequent Evolution of a Field and its Geometric Progressio*n*

The mean of *virtual Z* can be viewed as a relative force that expresses consequent evolution from *source Z* to *manifold Z*.



Above is an example of a delta +1 in the *consequent evolution* of the particle moment into new particle moments.

The relationship of the vectors afford other coincident moments of convergence. Thought, when given *consequent evolution* other particle moments can be expressed from the original field in Step 6.

Represented as a *geometric progression, manifold Z* can be extended in field strength, and therefore in area and density.

For example, delta +1 , if to occur in the consequent evolution of a particle *moment,* should derive *new particle moments.*

Concluded: ' area and density' of a manifold are proportional to its axis *torque*.

As a natural form of regulation, *the torque curve* is thought to share symmetry based on the principals of the *inverse square law.*

For regulating the tunnel affect inherent is ,the *'probability, t*hat a *particle of given potential energy can penetrate a finite barrier of a higher potential'*.

The *torque curve* is thought to become skewed in a logarithmic manner based on generations of progressions. Eventually, further evolutions require greater thresholds for torque to meet.

Conservation of Symmetry

Conservation of symmetry is considered maintained in the consequent evolution of a manifold into other particle moments. Thought here, particles can be derived from other particles of like properties.

That is, if to see a new expression of a *source(Z)* and *resonance(Zr)* expressed in the *coincident moments of convergence* of the evolved field.

Assumed, the extent of consequent evolution of *particle moments* is considered to be based on the *relative force* from a derived origin. This is where RG's *relative equilibrium* should be thought of as complementary forces around the event that counter balance it.

In all other cases of dimension(XYZ) , if to represent attracting forces, *relative equilibrium* can be based on a multiple to one coordinates – where range of relative force is from ++- to --+ .

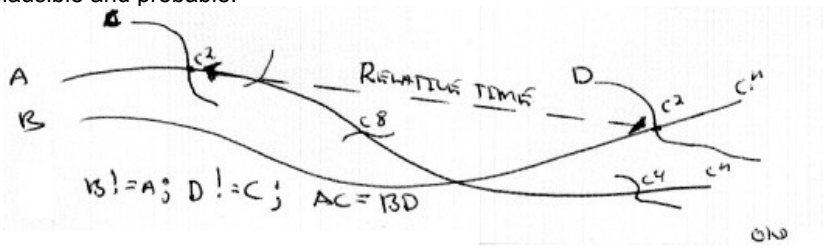
With respect to external relative forces around the event, ranges ++- to --+ are viewed as a unique band in a spectrum of relative forces.

Here, dark matter, if thought of as absolute space can be construed as a counter force with respect to any body in space.

V- The Particle Moment, Scientific Theory and Laws:

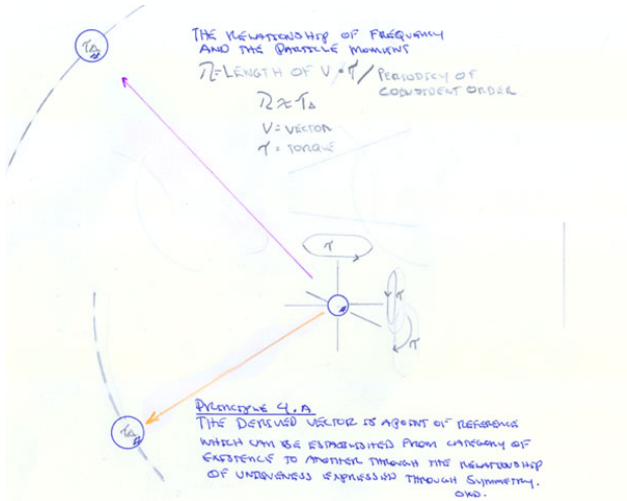
The *Pm's c*haracteristics are based on *Relative Gravity's laws* . They themselves *are* considered liberal extensions of accepted scientific law.

Based on RG's law IV, the model for a *fundamental particle's* moment is seen plausible and probable.



For plausibility of *a-causal origins, , RG's law IV* points out *that a* thread 'a' and 'b', as *wavelength times,* might or might not exist in a state where they originally derived *AC = BD* as points of a new wavelength.

In other words, in terms of randomness, there could always be another group of *A',B',C'* and *D'* that can derive the same wave length or one similar to some other instances of frequencies *AC = BD*.



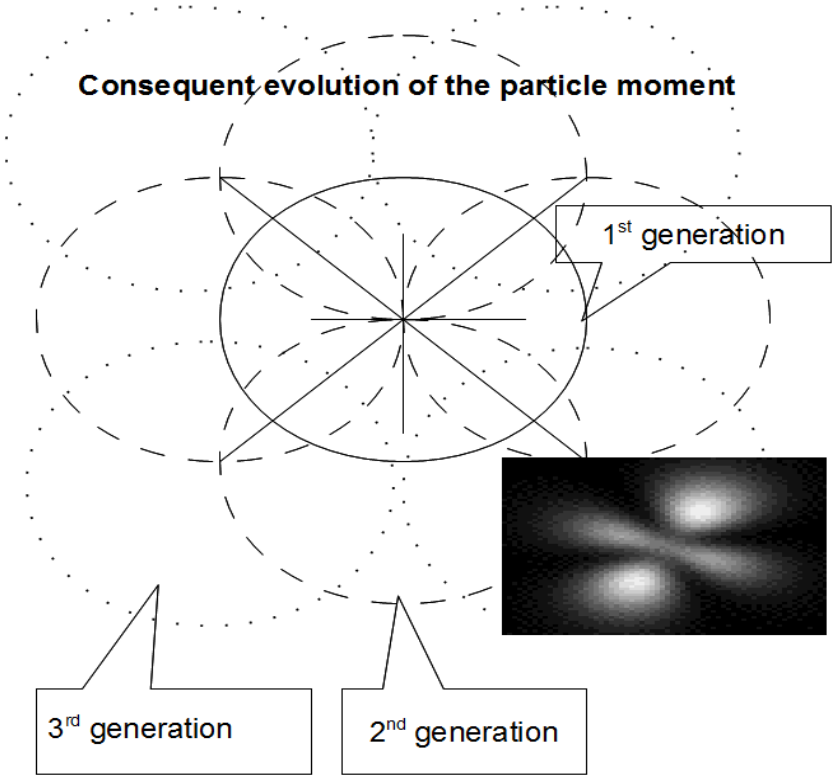
The Particle Moment (*Pm*) is intended to express the *sum* of vectors in *coincidence with r*espect to their valances. They are considered in phase with each other. The 'moment' refers to the *relative or periodic time T* of the existence for the expression of the particle in question.

The Atomic Particle:

The order of electron occupancy for science is considered to be based on a stable arrangement.

In general, if we were to view the *Pm* in the context of Louis-Victor de Broglie's wave mechanics, where the wavelength of an object in motion is inversely proportional to its momentum (p), the symmetrical expression of consequent evolution can then further assume compliance with Hund's Rule, the "Aufbau Principle", the "Pauli Exclusion Principle" ;and the "*laws of uncertainty".*

For the *Aufbau's Principle*: Lower-energy orbitals fill first: The *Pm* must occur in expression Tq+1, before it can occur in Tq+2.



For the *Pauli Exclusion Principle:* 'an orbital is thought to hold only 2 electrons with opposite spins T'.

The *Pm* can occur at opposite points representing equi-distant radii from the origin, or nucleus. Being mirrored in its expression an opposite state is for a given reflection.

For Hund's Rule: if *2 or more* <u>*degenerate*</u> *orbitals are available, 1 electron goes in each until all are half-full* . Consequent evolution occurs as Tq+1, Tq+2, and Tq+n. Tq+1 is assumed to still exist when *Pm* occur at level Tq+n.

For Heisenberg's *Uncertainty,* the relative standard uncertainty ur(y) of a measurement result y is defined by ur(y) = u(y)/|y|, where y is not equal to 0.

Calculating the "*the probability of an event*" is limited by the precision of a measurement for the *Pm*. As seen in the *Copenhagen Quantum Mechanics*, interpretation, *the act of measurement causes the set of probabilities to immediately and randomly assume only one of the possible values*.

For determinism and certainty, given *dimension(XYZ),* multiple particles may combine in relationship based on their number of combinations. Two (2) particles can have 16 relational states, and sixty four (64) for 8 and so on.

Particle Autonomy: Given the conservation of symmetry, particle relationships can be viewed as both time and dimension where having an autonomy in spacial time with respect to them selves.

They are thought to have an autonomy with respect to their relationship. In this way, the *Pm* is seen consistent with four laws of Relative Gravity.

<u>Law II - observation 1.4-</u> *Autonomy is* viewed as an entity's relationship with another such that there are a *quanta of probabilities* in combinations represented.

Noted before, as much as there is uniqueness, there could always be another group of wave lengths *A',B',C*' and *D*' that can derive the same wave length *as* others. In other words, frequencies are derived from others.

Autonomy can imply randomness. RG's four laws are based on the *Delta Phenomenon*, where in principles III and IV, uniqueness is addressed as propoerty inheritance:

Principle III - The *Delta Phenomenon* applies to an entity or a family of entities such that each may may be a unique personification, yet be part of the same *Delta Phenomenon* -

Principle IV- Consequently, The *Delta Phenomenon* although unique can parallel itself.

Principle IV.a, Hence, a point of reference can be established from one category of existence to another through the relationship of uniqueness expressed through symmetry.

Intended, an entity which has reached a point, thought as a *hysteresis in its own definition,* like in the case of the planets in our solar system, as an individual might also have a *greater superposition with another,* simultaneously it is considered in superposition with respect to *time and space* with still others.

Law I : *The nature of force is subject to the disposition of the entities; and subject to the Inheritance Factor of Linear Time.*

A- In *RG,* dimension and time are relative. There is no such notion as to the *largest* or *smallest particle.* As isolated systems, what is observed is made up of even smaller ones. Currents can be composed of particles.

Electrons are considered to remain constant in size based on an amplitude and reference to a frequency Tf. Particles can be thought to serve as a building block for o*ther particles that make up a fabric.* This fabric is based on *inheritance* where *relative in spacial time is a reference* to other T*f's.*

B- The *particle moment Pm* is thought to occur during the period of a *spacial time*. Seen, unique vectors are shared with two or more fields from a spacial manifold where having a reference to an origin as *dimension(XYZ*). Vectors X [e/t]+ Y [e/ t] + Z [e/ t] (and assuming 'n[e/t] ') are variable allowing states of valance and therefore disposition with respect to other manifolds.

C- The *pm* is seen as an expression of a spacial manifold. It can be in a state of quiescence of *relative equilibrium*, while consistent with the principles behind chemical equilibrium where dispositions are constant: X [e/t] ≈ Y [e/t] ≈Z [e/t].

D- The *pm* is thought to inherit its own expression of *torque* Tq_{pm}. This can be based on a single manifold, or more. The resultant expression of torque for the *particle moment* can be reasoned as:

Given that the *Pm* exists in an inertial frame of reference, there is an element of torque assumed, where the *sum of forces* is equivalent to $\underline{Tq_{pm}}$.
Axis Tq_{pm} = fabric field A_{torque} + fabric field B_{tq} + fabric field ntq

Given a change in disposition, such as an increase in torque by one or more of the spacial fabrics within some coincident order as the axis, the state of the *Pm* can go from $\underline{Tq_{pm}}$ to $\underline{Tq_{pm}}$+1, or +n. For a change of state from its existing *relative equilibrium*, as an *URf* , the *Pm* expresses *torque* in the context of its own manifold.

E- Given in all cases where the *Pm* is in its inertial frame of reference, and in a state of *relative equilibrium* - when subject to coincident order with other manifolds, it can express Tqpm+1 .

In this manner *Torque Tq* can be thought of as an underlying force that yields *particle moments*. They in turn have their *own axis of necessity , Tqpm,* to maintain. This is a product of the original Tq; and in addition, can also be from other Tq's of other manifolds. Natural order is considered regulated as a relative force is diffused through consequent evolution.

F- The manifold is considered to express a *hysteresis in field strength.* This is to be based on unique *states or scalars* in a *range* or *vector* of torque. Torque is thought to be consistent within the *resonance bandwidth* of the field for the period of the state for the coincident order involved.

Law II: *Between entities in spacial time, with respect to a factor of distance, disposition is observed as the attraction / repulsion level exhibited.*

Fermions and other subatomic particles are described in science for demonstrating the relationship of matter and anti-matter; how the nature of the *strong force* is exhibited in the nucleus of an atom; how the nucleus can be further made up of quarks; how electrons can be positrons; and ,how the *weak force* is exhibited.

Based on the dispositions of its fields, the *Pm* is considered to exhibit valences. This is in addition to the relationship that it has with its origin.

Chemical Bonding in the scope of Law II

As atomic fields move, value can change in state. Entity resonance **b**ased on valence for a relative time can be theoretically reasoned:

> *For every reference frame* **'A'** or **A (Ef/Tf)** there is a **'B'** seen as the resonance of **'A' .**
>
> Resonance **'B'** is therefore from a known start state of 'A' to a stop state of **'B'**.

*Ionic and Electron States***,** in atomic elements, are expressions of variance in the state within a third reference frame, 'C'. Due to its valances, the element can be –ionic, atomic, and/or +ionic in state.

In chemistry, a *covalent bond i*s thought to result when two atoms "share" valence electrons between them. The *ionic bond* occurs when one atom gains a valence electron from a different atom, forming a negative ion, or *anion*, and a positive ion, or cation respectively. As oppositely charged they are attracted to each other. For the metallic bond, believed, valence electrons are free to move about in a piece of metal, and are attracted to the positive cores of copper; thus holding the atoms together.

*Atomic Shells: V*ariances can be viewed as a valance state of an element with respect to other elements. In chemistry, this is considered the valance electrons in the outer shell of the top energy level.

> As values change, *the levels* Tq1, Tq2, Tqn are thought to re-balance with respect to the origin of Tq; which itself is seeking its ideal state of *relative equilibrium* as a *spacial manifold*. Hence the expression of *energy levels* can occur, where within, sub levels they can also which in turn can be maintained as orbitals of *Pm's*.

Particle Synthesis: Consistent with the view on electron orbitals and sub-atomic particles, due to the nature of a manifold's resonance, the energy state of *Pm's* in different sub levels can overlap. Consistent with the *Periodic Law*, It is plausible to consider unique particle types based on the synthesis of electron sub levels and in the nature of the nucleus in the abstraction of yet new expressions of *Pm' s* in relative equilibrium.

Law III- *The average force between entities can be relative to one over another, or equal, based on their equivalence in* E/T. Averages occur at a relative distance.

For law III, assuming proximity, a state of *relative equilibrium* can be thought of based on the entities in question. One can be larger than another. This is seen as a property demonstrated in atomic bonds. For example, consider electron equilibrium and relative distance in atomic bonding.

Paticle Moment symmetry in chemical bonding for Law III

Bonding for the *particle moment* is considered consistent in principle to the characteristics of chemical bonding, less differences noted:

Valence electrons can be actively involved in chemical change. They are thought of as electrons in the shell with the highest value of n *electrons in the "outermost" shell of an atom.*

*F*or example, sodium's *ground state electron* configuration is $1s^2\ 2s^2\ 2p^6\ 3s^1$*;* the *3s electron* is the only *valence electron i*n the atom. *This is where v*alence electrons *determine the chemical properties* of an atom and are the *only electrons* that actually participate in chemical bonding.

The Covalent Bond occurs when two manifolds are balanced. The appearance of the *Pm's* is in being shared between them.

Tqpm 1 = Tqpm 2, and valance is balanced within the two manifolds.

Moreover, The phenomenon of a *data covalent bond* is thought of as the case where a *Pm* has an expression in consequent evolution. That is, it is considered to bond as a spacial manifold that has not expressed a *Pm* in consequent evolution.

Ionic Bond: Bonding of Pm's as manifolds are viewed as in Ionic bonding when two or more manifolds require balancing to achieve a new ideal state in consequent evolution. Hence a transfer of Tq is shared such that:

Dimension (Xab, Yab, Zab) =
(Xa [Ex/Tx], Ya [Ey/Ty], Z Ya [Ez/Tz]) + (Xb [Ex/Tx], Yb [Ey/Ty], Z Yb [Ez/Tz])

Ionic states can be considered a matter of resonance: Reference frame **B, a**s A's reflection, can be construed as an *echo factor* of **A. B** itself is as constant as **'A',** where **'A'** represents B's fundamental..

Reference frame B consequently is a harmonic of *A.* **B** is also subject to the disposition of A's parent realm(s). Consisting of the conveyance of force, through inheritance, allows **'A' t**o have the variance of **'B'** as a harmonic..

Metallic Bonding: Seen as flux in the state of a bond, metals can be viewed to have more resonance than non-metals in a similar manner as alternating current. In fact, the notion of positrons, or positive electrons, in a sea of negative ones is consistent with *RG's* view on impedance of matter and surrounding space.

Law IV- ***'At a constant distance, the rate of disposition is constant.'***

For a manifold's radii, distance can be expressed as the periodic time where 'frequency = amplitude / distance'. A period is considered to be made up of two points. They define a periodic wave length of the radii for a field in question.

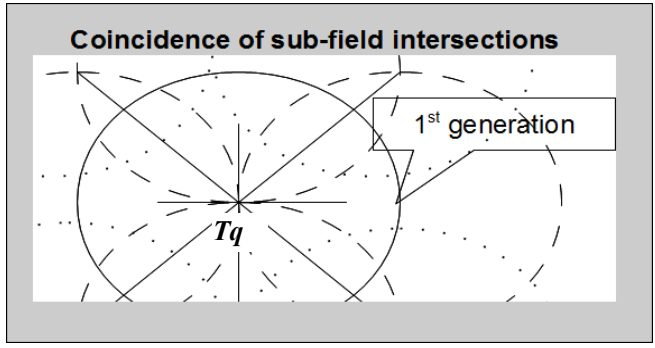
This dynamic is normalized so it is applicable regardless of when referring to atomic structures, galactic bodies and entities between.

The manifold is though to be made up of many radii that defines the total area as $4\pi r^2$, and also the relationship of 'radii at a given moment.'.

Energy, applied to the axis (X || Y || Z) is subject to the number of independent radii, their length, and the total field potential as energy with respect to *some torque Tq.* Its field as a *URf* is represented as a *uniform relative force* of $4\pi r^2 \surd [\ \Sigma RF)\ ]$.

Each radii has, inherent, a relationship with the whole body of the manifold. The radii represents a component of the total area and therefore can be represented as the diameter of a sub-field of the original area.

Radii are thought to have the potential to undergo a coincidence of sub-field intersections with respect to neighboring radii.



Particle moments can be referred to as sub-field intersections.

For sub-field radii we can speak of a 'moment' where two or more sub-field areas experience an intersection with respect to their origination; the main body's radii.

The sub-fields are subject to coincidence that can be a companion to a constant relation due to the overall strength of a state of *Tq*.

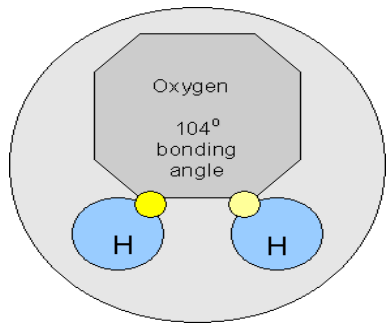
Like valence electrons which bond between elements, the *particle moment* is seen to represent the *rate of disposition* of the overall entity in question.

The view on chemical bonding types in Law IV

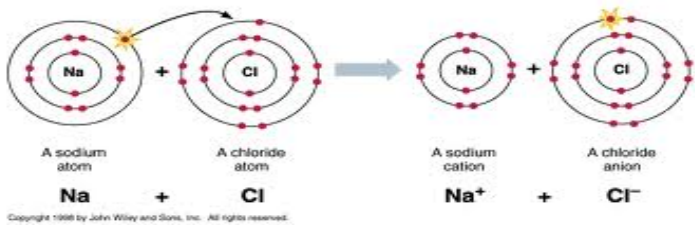
Atomic radii are assumed to vary depending on an atom in being atomic or in Ionic states. This variance for *RG* is seen due to a *resonance band ,* and a *related mean* for the entity in question.

Valance Bonding assumes proximity for the disposition of energy between two manifolds. Assumed, the disposition of the *Pm* changes with respect to its state in RG's *relative equilibrium.* Therefore the dispositions of the manifolds in bonding can vary from their sole dispositions.

Covalent Bonding is when *'Tqpm 1 = Tqpm 2' .* The *Pm* is considered balanced in the sharing of dispositions. Example: the overlapping of electron clouds in the Hydrogen bond *H2* are considered equi-distant.



Ionic Bonding: In Ionic Bonding, radii can be larger if negative, and smaller if positive. For RG this is simply about how it refers to *relative polarity* where in defining relatively 'more negative and less positive; or more positive, and less negative' ranges.



http://www.geo.arizona.edu/xtal/nats101/9_1.jpg

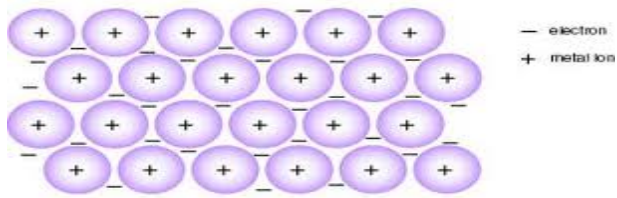
For RG's *relative polarity*, particles and subatomic particles are firstly seen as manifolds of currents that have a relative polarity. As an example, relative polarity could mean that, that which is more positive is more positive than something which is considered less positive; yet that which is less positive is more positive to something that is more negative; and which is less negative to something that could be even more negative.

The rate of disposition in Ionic bonding for any sub-atomic particle must be consistent with *RG's* view of a fundamental manifold field.

That is, in either sub-atomic particles; or in bonding, is in achieving a state of stability based on one of the twelve (12) of sixteen (16) relationships of disposition:

Entity A	Entity B		
Negative	Negative	No Bonding	No Change in Disposition
Negative	Less Negative	Bonding	Change in Disposition
Negative	Less Positive	Bonding	Change in Disposition
Negative	Positive	Bonding	Change in Disposition
Less Negative	Negative	Bonding	Change in Disposition
Less Negative	Less Negative	No Bonding	No Change in Disposition
Less Negative	Less Positive	Bonding	Change in Disposition
Less Negative	Positive	Bonding	Change in Disposition
Less Positive	Negative	Bonding	Change in Disposition
Less Positive	Less Negative	Bonding	Change in Disposition
Less Positive	Less Positive	No Bonding	No Change in Disposition
Less Positive	Positive	Bonding	Change in Disposition
Positive	Negative	Bonding	Change in Disposition
Positive	Less Negative	Bonding	Change in Disposition
Positive	Less Positive	Bonding	Change in Disposition
Positive	Positive	No Bonding	No Change in Disposition

Metallic Bonding is seen based on the resonance range in dispositions. As current flows through a metallic bond, it is within a bandwidth expressed by the resonance of the bond in simple harmonic motion.



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This is where acceleration is proportional to displacement but in an opposite direction. Hence, represented as radiant heat in electrical wire under current.

Consider this with respect to RG's abstract definition:

The potential energy of bodies purported as amplitude in kinetic energy and expressed as some spacial time in the form of a resonant frequency shared between them.

The resonant frequency is considered a shared fundamental that is measured through their bodies' level of superposition.

The kinetic expression is subject to the disposition of the bodies' potential uniquely'.

VI- Perceived Properties of the Particle Moment:

Based on *RG's* view, as complements or opposites, energy and space could be construed as in seeking a *relative equilibrium* on an infinite scale. This is where *time* affords the means for its balance.

Dimension is derived as energy and space, such as the case of heat and cold when seeking common paths to meet perpetually in *relative equilibrium*.

As an orderly linear system, *dimension XYZ* represents the core component of a manifold. To achieve a spacial time, the result of all manifolds, that some form existing within a time and space is composed of, must total in *net 0* for all related forces.

Given *dimension XYZ* as a spacial time, the following properties A-H are assumed:

Property A- Periodic Torque *Tq and Area of Resonance*

As the periodic reference to the particle moment *Pm* implies, a *state of relative equilibrium*of the *respective field(s) is equivalent to* a *state of torque* as a constant.

Torque is viewed as the equivalent of an ideal field's state as its field strength for the time of its existence in relative time. In assuming the existence of *Tq*, the state of the ideal field is also assumed.

Torque can basically be defined' as the amount of energy 'EΔ ' represented as *Tq* required to express an omni directional expression of force. For a spacial manifold', torque is based on its fundamental vectors XY and Z. In this way, a *uniform relative force* can be thought of for the Bohr atom.

Seen. *a body* may be defined in terms of Tq where *area of force* is:

$$Tq=` \; X\,[E/T] + Y\,[E/T] + Z\,[E/T] + n[E/T]` \approx WA$$

Torque when explained as an Euclidean 3 dimensional expression can be thought of as *where all vectors can be expressed* in terms of a relationship of coincident order of participating manifolds.

Given a torque curve, the *URf* is considered to express a variable field strength. From this, a spectrum is thought to occur. This spectrum is considered here as instances of spacial times.

That is, like an inertial frame of reference, the *URf* is to exist in a relative time within some linear time where the inheritance of properties allows for coincident order and its consequent evolution within a spectrum: eg,- similar to how a *singularity* and *big band* are typically thought of.

In representing the sum of other forces, torque, geometrically as a constant, can represent and express a particle moment,. Considered, the *inverse square law* applies to a field for a marked state of torque.

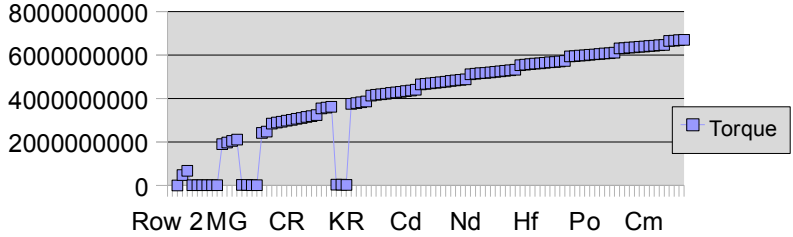
Torque for *RG* also represents an *expressed spectrum.* This is in terms of its range. This range assumes other states of a *URf* as an ideal field.

A Torque Curve for the Periodic Table of The Elements (PTE)

The range can be a spectrum of states where each, if applied to matter can actually represent fields for the elements in the *PTE*. This is where each element is heavier than its predecessor, but can be related based on a spectrum of others as a delta+1 of its category.

Periodic Law says that the properties of the elements are periodic functions of their atomic numbers.

Torque range as a delta+1 against a fundamental field is considered the means for its orderly progression for an atomic number as a uniform relative force, *URf* .



Consequently Seen:

1- In the expressed spectrum, seen is a *mean*, and a *range of resonance* for each atomic element to exist within a state of torque for an ideal manifold.

The elements of the *PTE* based on their atomic weight, when represented as amplitude, can demonstrate a *natural order* for the *atomic mass spectrum*.

Each participating element has an unique area of resonance that is considered to be marked by hysteresis at its bounds.

2- Each unique ideal manifold expresses a *relative uniqueness* and resiliency within its band of resonance.

Radioactive decay in heavy atoms is viewed as a variance within the expressed spectrum.

3- *Relative uniqueness* to express unique dispositions.

In a spacial expression of coincident order, being from one state to another, harmonics are in fact considered spacial.

Coordinates for a spacial expression *dimension X+Y+Z+n* all can demonstrate unique spectrum's; and expressed as other spectrum's like a synthesis within a manifold.

4- Each unique manifold can be expressed by its properties.

Two or more entities within the fabric can afford a relationship that is equivalent to two or more other entities which are entirely different in properties within the same fabric.

5- An element can be represented by its resonance.

We can theoretically determine that for every reference frame 'A' or A (Ef/Tf) there is a 'B' as the resonance of 'A' where resonance 'B' is therefore from a known state (start state of 'A') to a stop state (another known state 'B').

'B' can be construed as an '*echo factor'* of **A** as its reflection. **B** in of itself is as constant as **'A',** where **'A'** represents B's fundamental; and **B** consequently is a harmonic of **A**; but **B** is subject to the disposition of A's parent realm(s) which allows **'A'** in the first place to have the *variance of* **'B'** as some *harmonic*.

6- Matter as both elements and as part of the atomic mass spectrum have a known time.

The duration of an element's relative time is not necessarily known; that is, less the half life of elements.

For physical matter, linear time can be viewed in billions of years, if not trillions, where an element within the spectrum's relative time is expressed.

Hence, the *atomic mass spectrum* is subject to coincident order and consequent evolution in its time and dimension.

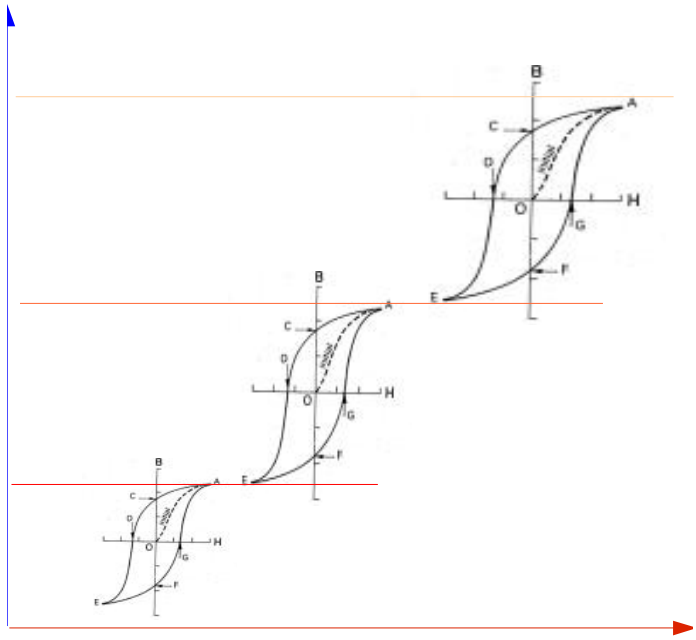
7- The linear time of elements can be demonstrated in terms of the points of their evolution from the Earth's core to their known states as Atomic Mass Units.

The *relative time* for the *natural order* of the *atomic mass spectrum,* as a progression of known states, is considered much slower than we, its observer.

Relative time for the existence of mass is considered a continuum from the standpoint of limited observation.

8 - Resonance Mean and Spread

Resonance can be viewed as the *mean* of an area within a spectrum. A resonance *spread* in addition to the *mean* can explain bands in the spectrum based on number systems such as *base 64*.



Torque and Hysteresis

Each participating element can have an unique area of resonance marked by a hysteresis at its bounds. Torque is thought to be consistent within the resonance bandwidth of the field for the period of the state for the coincident order involved.

Area * (*mean energy*) = frequency * amplitude; and therefore can be construed to express the frequency and amplitude of a radii. Speculated:

$2\pi * (M/T)^{½} = 2\pi * (E)^{½}$ = area * (mean energy in range [$E\ avg_{]}$) ,

$Rfa = 2\pi * (M/T)^{½}$ . . . . .

Resonance Mean Rrm = (Rfa1+Rfa2)/2
Resonance Spread Rs = Rfa1-Rfa2

Property B - Fundamental Valance and Torque Tq:

The disposition of the manifold is considered derived from the relationships of *Tq* where Vectors X [Ex/Tx]+ Y [Ey/Ty] + Z [Ez/Tz]+n[E/T/] are assumed as a variable source.

Concluded: the manifold will express states of valance even with respect to other manifolds. Consider valance as observed in *RG's* law II*:*

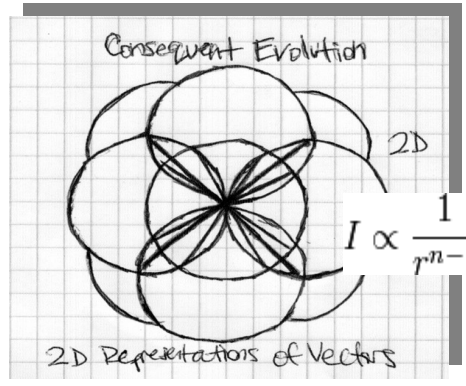
> *The disposition is identified as the level of attraction, and repulsion of the two or more entities with respect to a factor of distance within a realm of reference, or spacial time.*

In scope, valence is seen as a means to weave what could be construed as *spacial fabrics*. Like statically clinging sheets, *Relative Gravity* is considered plausible even between the valances of separate spacial fabrics. This is because, regardless of scale from atomic to stellar, the properties behind all general principles of valence are shared such as in atomic bonding. Symmetry is resolved simply through interpreting covariance of properties. In other words, even bed sheets are made of atoms.

Property C - **Consequent Evolution of the Manifold:**

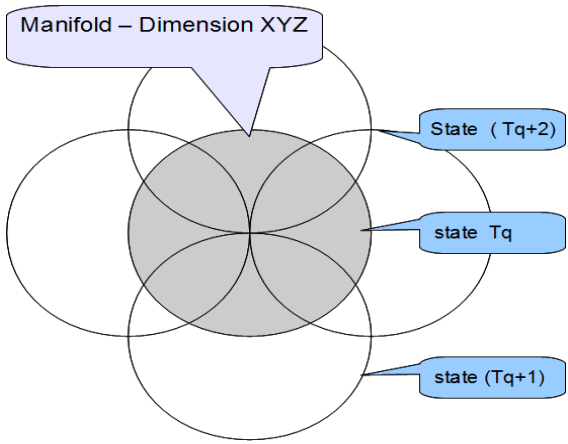
Consequent Evolution of a manifold's body is thought to occur when *Tq* becomes a symmetrical expression of *coincident order* represented as Tq*+1*, *Tq+2.*

Relative to torque *Tq* for the given area of the manifold, assumed, when more force like a Tq+1 that the field normally contains as *Tq* can cause a coincident order to occur symmetrically. This is considered a periodic progression in manifold space based on a rate where consistent with the *inverse square law.*



Property D- Symmetrical Expression of Coincident Order:

The *symmetrical expression* of *coincident order* is viewed as a unique consequent evolution of the manifold.



Consequent evolution within the manifold

Consequent evolution is viewed as a new state Tq+1 within the manifold. This is with respect to its disposition expressed by the coincident order of its symmetrical expansion.

The coincident order of symmetrical expression is considered an expansion of the manifold. The expansion can be represented as new manifolds of spacial fabrics that represent the original manifold.

Particles are considered to be based on the particle moment's related states. Seen due to the nature of entity resonance, the energy state of PM's in different sub levels can overlap. In doing so, it is plausible to consider the existence of yet unique particle types. This is considered based on the synthesis of sub levels and the abstraction of yet new expressions of *particle moments*.

Property E- Period of Coincident Order:

The period of coincident order between intersecting radii and fields, and/or fabrics, can be further seen as the *Pm's* characteristics. The *Pm's* event can occur for a period of relative time in a location of coincident order relative to the manifold's body.

Seen as a-causal in manner, an inconstant connection through points of equivalence in reference, and a constant connection through the affect of their moment in crossing paths exists. *There could always be another group of A',B',C' and D' that can derive the wave length or one similar to AC = BD.* This could be referred to as an a-causal reference point of density, mass and volume depending on the dispositions of the energy, and point in time.

Property F- Periodic Occurrence:

The existence of the *particle moment* is considered dependent on the torque constant against the manifold; and represented as the periodic occurrence of coincident orders of radii that come into phase.

The *particle moment Pm* is subject to the valances of its spacial fabrics in a manner expressed as waves that coincide for a given periodic time.

The state of the *Pm* can be considered cyclic as having a time period of its expression that is subject to *T infinity as a* state of quiescence.

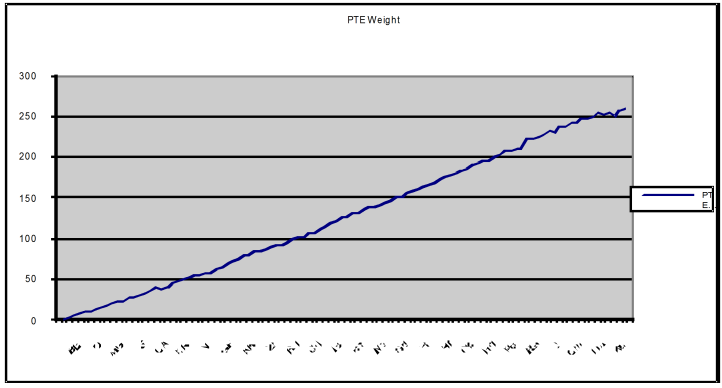
While coincident orders of radii are in phase as mutual peers, the *Pm* can exist. While the coincident orders are not in phase the *Pm* does not exist.

In Law I, Observation 3 - Seemingly to parallel in a symmetrical manner with other instances, variances in symmetry can be viewed as minimal, significant, none, or perceived within an instances skew of spacial time.

Property G- Equivalence of Occurrence:

Because consequent evolution of the manifold is considered symmetrical in expression, the *Pm* can be expressed as an *equivalence of occurrence* that is recognized by the *probability of known states*.

Coincident order can have multiple expressions: two or more entities can afford a relationship equivalent to two or more other entities where entirely



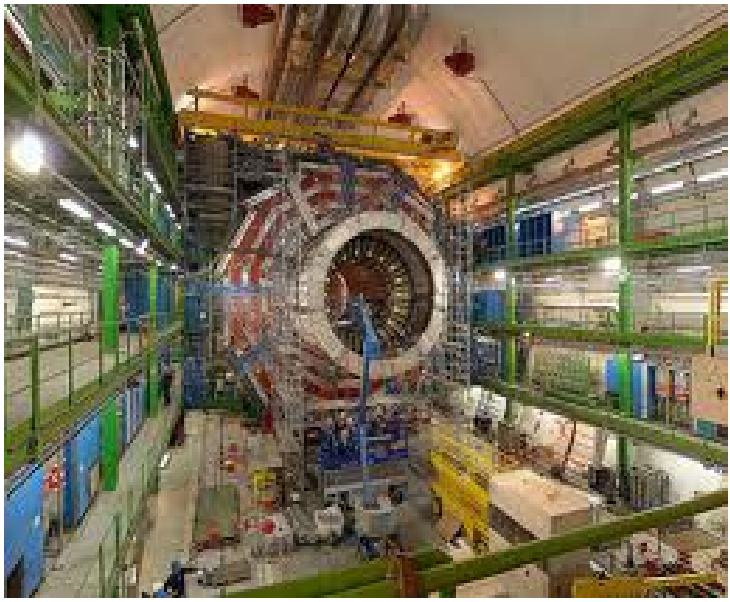
different in properties.

Two or more instances of [Entity Ef/Tf] can occur that both represent the same *relatively unique entity.*

This is because ‘a vector derived from the origin of torque and the particle moment sweeps out in equal areas in equal time Intervals’.

Property H- Particle Autonomy:

Science has endeavored to discover more and more sub-atomic particles (Baryons, Mesons, Bosons, leptons) that represent the constituents of matter.



Source: Google images . . .

In some cases particles are considered 'free entities' as experienced in various types of accelerators and testing/research chambers to understand their characteristics as well as the discovery of yet other particles.

Although the above is beyond this addendum's scope, the nature of particle autonomy is accounted for in the *Laws IV of Relative Gravity* as 'equivalence of occurrence and a rate of probability'.

All particles discovered, or yet to be, are viewed here to exist within the constraints of RG where in being considered as independent of an atom or part of its constituents.

The manifold is considered to express the nature the *Pm* such as in terms of an atom's nucleus, an electron or otherwise.

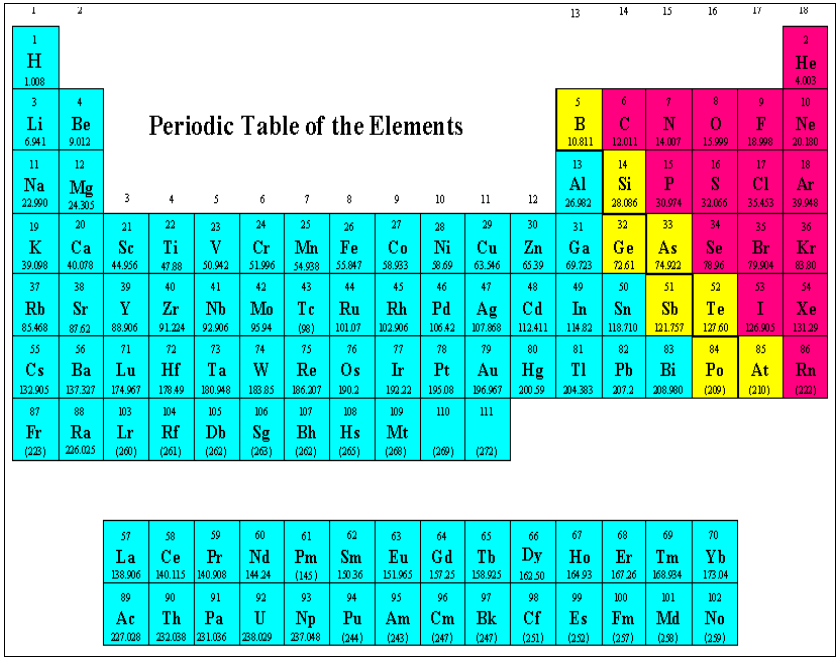
VII- Hypothetical model for the evolution of matter

vi.1 Natural Order of the Elements and an Atomic Mass Spectrum

Chemistry's *Periodic Table of the Elements* has gone through its own evolution. Since 1649 matter's elements have been ordered and reordered by a number of scientists including Hennig Brand in discovering phosphorus, and in 1817 from the 'Law of Triads' by Johann Dobereiner;

A.E.Beguyer de Chancourtois,noted in 1862 that elemental properties reoccur every seven elements. Other contributions were made by John Newland who wrote a paper in 1863 named the 'Law of Octaves'. He stated that "*any given element will exhibit analogous behavior to the eighth element following it in the table"* .

Dmitri Mendeleev in 1869 reordered the elements *despite their accepted masses*. He provided a way to associate the elements based on their similarities for periods of reoccurring properties. In1951, Glenn Seaborg reconfigured the periodic table by placing the actinides series below the lanthanide series once discovering all the transuranic elements.



Moreover, The PTE as Chemistry's Holy Grail has gone through many changes in its evolution to present day.

Anatomy of the PTE

The PTE provides an ordered view by 'periods, and groups' that are associated for estimated *atomic mass units* or AMU. The elements are arranged in increasing order of atomic number placed from left to right across the table. The horizontal rows are called *periods.* The vertical rows are called *groups***.**

A *noble gas* is found at the right hand side of each period. There is a progression from metals to non-metals across each period.

Elements found in groups (examples: .alkali, halogens) have a similar electronic configuration. The number of electrons in outer shell is the same as the number of the group (example. lithium 2·1).

The block of elements between groups II and III are called *transition metals*. These are similar in many ways; they produce colored compounds, have variable valency and are often used as *catalysts*.

Elements 58 to 71 are known as *lanthanide* or rare earth elements. These elements are found on earth in only very small amounts.

Elements 90 to 103 are known as the actinide elements. Included are well known elements which are found in *nuclear reactions.* The elements with larger atomic numbers than 92 do not occur naturally. They have all been produced artificially by bombarding other elements with particles.

Atomic Mass Spectrum (AMS)

Proposed, the known elements can further be expressed as spectrum's due to a *torque range* of a hypothetical manifold's axis. Seen is a normalized ordering by atomic weight, or electron periods that correlate to an *atomic mass spectrum*. In retrospect, for chemistry, every element can be identified through its own expression of a spectrum within the atomic mass spectrum band.

Regarding an expressed spectrum for the AMU -

"The atomic mass of a specific atom or molecule is determined by using an experimental technique called mass spectrometry. This technique separates the different isotopes of atoms to allow determination of the percent abundance or isotopic composition of the element in the given sample." http://www.chemistry.wustl.edu/~coursedev/Online%20tutorials/Atomic%20Mass.htm

In the forgoing is a model for *hypothetical matter*. It is based on a calculated *AMU* and compared with the *PTE's* and its electron count.

Due to what is considered a resonance, the *AMU* is calculated based on formulas that account for a *mean,* and a *range of resonance* for each element. This is for them to have a state of *quiescence* as a manifold in spacial time while being in an orderly progression seen in the *PTE*.

The Expressed Spectrum for the AMU

As an *expressed spectrum* in the table below, note the high, low and means compared to the PTE's AMU.

Element	Group	PTE Weight	HighMark	Low Mark	Mean	Variance
H	NonMetals	1.0797	1.0797	3.1998	2.1398	-2.1201
HE	Noble Gas	4.0026	3.91970	3.2795	3.5996	0.6402
LI	Alkali Metal	6.9390	6.75970	5.4793	6.1195	1.2804
B	Metalloid	10.8110	12.43970	9.8789	11.1593	2.5608
F	Halogen	18.9984	23.79970	18.6781	21.2389	5.1216
CL	Halogen	35.4530	46.59170	36.2765	41.3981	10.2432

The atomic mass spectrum for the known elements is based on the AMU.

The Hypothetical Math Model for the PTE

The Hypothetical Math Model, although uncannily consistent with the *PTE*, is just another means of enabling perhaps further discovery that might add value to the world of chemistry.

The *PTE* is sorted by electrons and by atomic number. This suits many things for chemistry, but also can be viewed as limiting matter's paradigm based on its organization for suited purposes.

Intended is that ordering by the *AMU* allows other dynamics to be identified. In being able to provide a means to calculate atomic mass, perhaps additional, and yet unknown elements can be anticipated for discovery.

Although *the periodic table*, such as in the '7 periods', demonstrates a harmonic progression, assumed, the groups identify shared properties of inheritance in being 'periodic',

The spread sheet based math model is to decompose the *PTE* in a further empirical manner. In other words, to be 'ordered only by *AMU* weight. The objective, to be able to show the mathematical relationship between the elements that identifies:

1. Inheritance of Properties
2. The Atomic Mass Spectrum
3. Identify Numerical Symmetry where possible
4. Identify Oddities (Note the *electron count question*)
5. Torque curve for matter as we know of it in the physical universe.
6. A spacial area that torque can be expressed in with respect to an element based on a range of its resonance across its mean.

The What and the Why

The fixed atomic weights assigned in the *PTE* serve molar mass equations well. This can be thought of as having to do with 'the what in chemistry'.

Questioned, here – the estimates are not based on calculations, but instead intended for a since of order based on electron counts, and the classification of elements.

To accommodate this, like the electron, earlier noted: the *particle moment* is seen to represent the *rate of disposition* of the overall entity in question

The hypothetical model is intended to explain *the Why* behind the existence of the elements using *RG* as a base class for its theory and assumptions.

In retrospect, for spectroscopy, such as for hydrogen, the atomic spectra are demonstrated as bands in the ultra violet and infra red regions of the spectrum.

Based on *AMU's, t*he atomic weights as a hierarchy is considered to suit a spectrum. In other words, in assuming the greater the mass, then the greater the energy.

Consequently, elements themselves must be looked at in a manner of an atomic spectra. That is, before looking at electron counts in outer shells as a consequence that can be thought of as based on the spectra.

All calculations in the model are based on the ordering by atomic weight in a manner of progression that suits a spectra.

Element	Group	PTE Weight	HighMark	Low Mark	Mean	Variance	Resonance
H	NonMetals	1.0797	1.08	3.1998	2.1398	-2.12	-212.01
HE	Noble Gas	4.0026	3.91970	3.2795	3.5996	0.64	64.02
LI	Alkali Metal	6.9390	6.75970	5.4793	6.1195	1.28	128.04
BE	Alkaline Ear	9.0122	9.59970	7.6791	8.6394	1.92	192.06
B	Metalloid	10.8110	12.43970	9.8789	11.1593	2.56	256.08
C	NonMetals	12.0112	15.27970	12.0787	13.6792	3.2	320.1
N	NonMetals	14.0067	18.11970	14.2785	16.1991	3.84	384.12
O	NonMetals	15.9994	20.95970	16.4783	18.7190	4.48	448.14
F	Halogen	18.9984	23.79970	18.6781	21.2389	5.12	512.16
NE	Noble Gas	20.1790	26.63970	20.8779	23.7588	5.76	576.18
NA	Alkali Metal	22.9898	29.47970	23.0777	26.2787	6.4	640.2
MG	Alkaline Ear	24.3050	32.31970	25.2775	28.7986	7.04	704.22
AL	Other Metal	26.9815	35.15970	27.4773	31.3185	7.68	768.24
SI	Metalloid	28.0860	37.99970	29.6771	33.8384	8.32	832.26
P	NonMetals	30.9738	40.83970	31.8769	36.3583	8.96	896.28
S	NonMetals	32.0640	43.67970	34.0767	38.8782	9.6	960.3

Atomic weight can represent a realm in the atomic mass spectrum; Consequently, it should be plausible that one element within the spectrum can be calculated, or derived, mathematically from another element in a

similar manner as having bands within the spectrum.

Oddities such as electron counts are able to be included in many phenomenon of matter as opposed to being its main focal point.

In the model, the *AMU* of one element is derived based on a calculation of a previous element's *AMU*; Hence, further hypothetical elements can likewise be calculated.

The PTE Spread Sheet Columns

Column	Description
A	Element Symbol
B	Element Group
C	AMU based on Periodic Table of the Elements
D	AMU High Mark – Derived as calculation '2*((Previous Element / 2) + 1.42)) '
F	AMU Low Mark – Derived as calculation '2* ((Previous Element / 2) + 1.0999))'
G	Mean, or The Average of AMU (High Mark + Low Mark / 2)
H	Variance = High Mark – Low Mark (Note Base 64 in Results)
I	Resonance = Variance * 100
J	Octet Identifier (identifying unique Enumerations of 64)
K	Harmonic Mean – Resonance / 8
L	Fundamental – Unique Identification of Base 64 derived from 'K' The Harmonic Mean
M	Electron Counts – Note that for every 10 elements, Electron Counts are adjusted in the formula
N	Torque – derived from $(4Pi * R^2) *$ Square Root of Force
O	Valence = Torque / Electron Count
P	Energy = C2 * AMU
Q	Constant C2 as 346^{E10}
R	Constant for 4Pi (3.141592654*4)
S	Constant for 2Pi (3.141592654*2)
T	Radius (derived as Harmonic Mean / Electron Count)
U	Elements Number with respect to the Periodic Table of the Elements

Formula for Calculations

Realm High Mark: The High Mark formula of each element is based on the previous element's high mark such that:

Element **CL amu High Mark =** (2*((element **S amu High Mark**/2)+1.42))
Element **AR amu High Mark =** (2*((element **CL amu High Mark**/2)+1.42))

Realm Low Mark: The Low Mark formula of the same elements is also based on the previous elements low marks:

Element **CL amu Low Mark =** (2*((Element **S amu Low Mark**/2)+ 1.0999))
Element **AR amu Low Mark =** (2*((Element **CL amu Low Mark**/2)+ 1.0999)

Realm Mean: The mean formula of the same elements is simply the mean between the high and low mark.

Relative zero for the realm = atomic mass unit = high mark + low mark/2

Note the atomic mass spectrum H0, HE=64, LI = 128, B=256, F= 512, and CL = 1024.

Harmonics are viewed as a cyclic expression based on frequency and amplitude.

Spacial harmonics are considered the sum of all (F,A) for the given spacial expression.

The *variance* – (high mark AMU) - (low Mark AMU) are to demonstrate the spread for a realm of torque Tq.

This is depicted in the far right column. Note the base 64 in the variance and resonance Columns.

Between each element, the spread in the realm is based on an increment of '64' from the previous element.

Column C

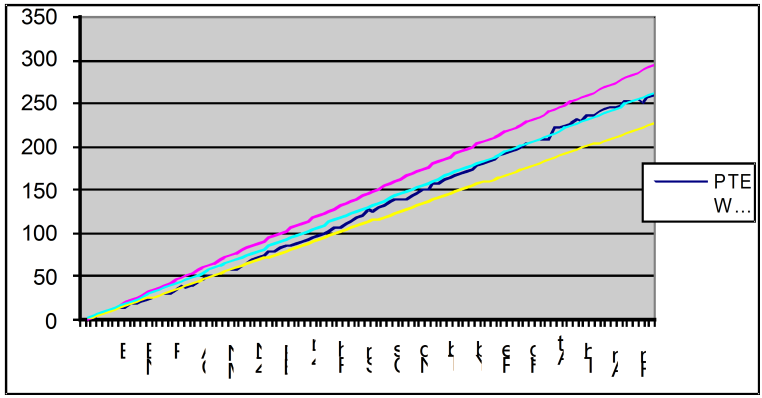
If we wanted to plot a hypothetical torque curve that suits the model, the *AMU* represents an increment between elements. The torque curve could be derived just by the increase in *AMU's* per element..

This though would not account for an actual calculation for the increment in question. It would also not account for a *variance* in the actual measurement of the *AMU* as a raw calculation; and hence a classical torque curve.

A Point of Reference in Calculating AMU's, Columns D, F, G –

Consistent with the view of resonance, the approach taken was in creating formulas that represented a *High Mark*, and a *Low Mark* as to where the *AMU* can be derived. This is based on the variance between the *High* and *Low* marks, the *'Mean' or Average*, and then comparing the results to the established *AMU's* within the *PTE*.

Charting Element Torque based on Calculated AMUs'.



Calculated High and Low Marks:

The pink/violet line represents the *AMU high mark*. As is demonstrated in the chart, it like the *Low Mark* that is in yellow, both represent the outer bounds of the graph, and are straight linear lines.

The *mean* is the cyan/blue straight line that is equally aligned between them.

The *PTE's AMU* is the dark squiggly line. Notice how it hugs the low mark for the lighter elements and then is aligned with the 'Mean' during the arrival of Cs within the Torque Arc.

Base 64 Symmetry and harmonic displacement between the elements

In addition to the 7 periods that are known, base 64 was observed in the calculations in representing the consistent spread between the *high* and l*ow marks* that is unique per element. This is expressed in columns:

H	Variance = High Mark – Low Mark (Note Base 64 in results)
I	Resonance = Variance * 100
J	Octet Identifier (identifying unique Enumerations of 64)

K Harmonic Mean – Resonance / 8

In fact, through out the entire math model on the spread sheet the '*variance'* column indicated a specific, and consistent increment of base 64 per increment in terms of the high /low mark spread.

Although this should not be construed as Newland's '*Law of Octaves*', but perhaps it could be considered similar in intent.

This means that any element demonstrated this spread with out deviation. The examples below represent the main bands of the atomic mass spectrum where any element between them belongs to one of these bands.

Atomic Mass Spectrum

Element	Group	PTE Weight	HighMark	Low Mark	Mean	Variance
H	NonMetals	1.0797	1.0797	3.1998	2.1398	-2.1201
HE	Noble Gas	4.0026	3.91970	3.2795	3.5996	0.6402
LI	Alkali Metal	6.9390	6.75970	5.4793	6.1195	1.2804
B	Metalloid	10.8110	12.43970	9.8789	11.1593	2.5608
F	Halogen	18.9984	23.79970	18.6781	21.2389	5.1216
CL	Halogen	35.4530	46.59170	36.2765	41.3981	10.2432

The Atomic Mass Spectrum in Relation to the 7 Periods

The *AMS* shares the same elements as in the first 3 periods, but then proceeds each of the remaining periods.

The *AMS* enables elements to be uniquely identified within a relationship of base 64; where the periods represent the range of field strength within that area of the spectrum; where the 'points' in the *AMS* appear to represent the average in field strength for the period in question.

The *AMS* can show each unique element as an expression within it.

The *mean radii* in column Y of the model was used in the calculation for field strength. Additionally energy was based on the mean *AMU* * C^2. T in this case was set to 1.

Use of the Atomic and Ionic Radii and the Mean Columns T, U, V, W, X -

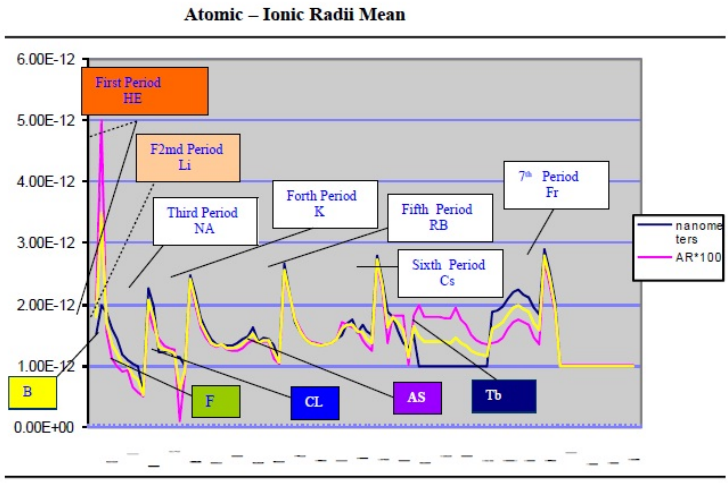
Calculations based on atomic radii are used in the math model. Differences between *atomic* and *ionic radii* are accounted for by establishing a *mean* between them.

A *mean* is referred to instead of *'the mean*', as sources for both *atomic* and *ionic radii* differ. An example is Hydrogen where *atomic radii* is reported as 20.8, and 37 pico meters from two separate sources.

A *mean* was used as to allow *variance*, and hence a *spectrum* that a *radii* can exist in for a given element. In essence, this is construed here to be the same as the difference of ionic +, atomic, ionic – in degrees of variance.

Mass or matter for *RG* is always in a state of transition in a similar manner as everything else. When observing *matter*, it can be concluded that this is the transition within a ban of the *AMU* for the element in question.

Sources for both *atomic* and *ionic* had some elements missing. A best guess basis was used for the omissions in the sources. In the math model, these are listed in 'red". This omission was mostly for the heavier elements.



Note 1- There are multiple cross over points – the atomic & mean can be BE and the Ionic = B; atomic and mean = B, and ionic = C.

Note 2- Elements H, HE, LI, NA, K, Rb, CS, FR are considered the start of the unique periods in the PTE

Note 3- Elements H, HE, B, F, CL AS Tb are considered the AMS main bans.

Note 4- The slopes appear to rise when reaching the periods, and the *AMS* is on the downward slope.

Electron Count based on AMU Mean

For the purposes of being consistent with the *PTE*, electrons were included. Electron count is based on a calculation within the spread sheet, and not directly from the *PTE*. The accuracy was in 96% of 105 elements.

The formula “mean/2.49” was used to calculate the electron count. The mean, represents the high and low marks or the resonance of the atomic mass spectrum. Argon is one oddity in terms of a linear progression of *AMU*, and symmetrical electron counts. Accounting for entity resonance enables the mathematical means to account for oddities.

NE	10
NA	11
CA	20
SC	21

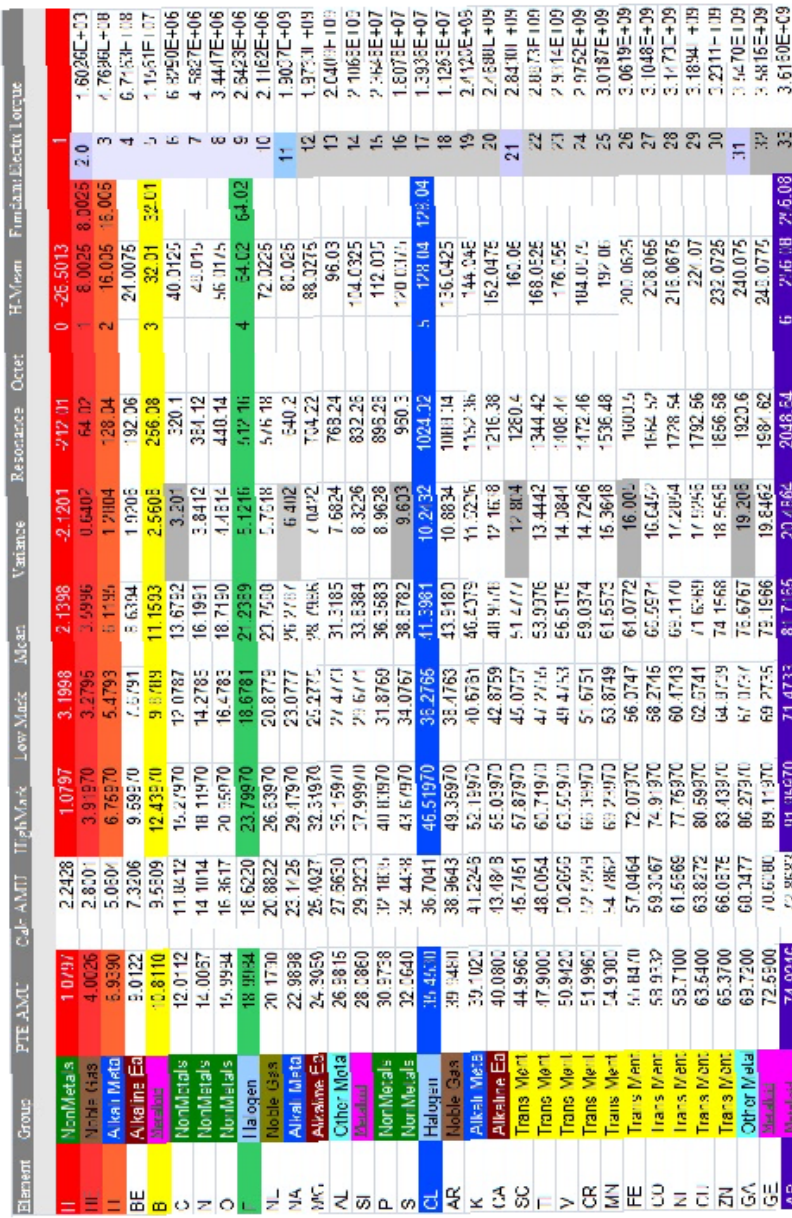
Notice in the *variance column* the grayed cells. These represent *roll over counts* where when expanded in the resonance column have apPeriod of 2,4,6,8 then ‘A’, 2,4,6,8 and then ‘B’, etc.

Variance, Resonance, Harmonic Mean and Electron Count

riance	Resonance	Octet	H-Mean	Fundamental	Electrons
-2.1201	-212.01	0	-26.5013		1
0.6402	64.02	1	8.0025	8.0025	2.0
1.2804	128.04	2	16.005	16.005	3
1.9206	192.06		24.0075		4
2.5608	256.08	3	32.01	32.01	5
3.201	320.1		40.0125		6
3.8412	384.12		48.015		7
4.4814	448.14		56.0175		8
5.1216	512.16	4	64.02	64.02	9
5.7618	576.18		72.0225		10
6.402	640.2		80.025		11
7.0422	704.22		88.0275		12
7.6824	768.24		96.03		13
8.3226	832.26		104.0325		14
8.9628	896.28		112.035		15
9.603	960.3		120.0375		16
10.2432	1024.32	5	128.04	128.04	17
10.8834	1088.34		136.0425		18
11.5236	1152.36		144.045		19
12.1638	1216.38		152.0475		20
12.804	1280.4		160.05		21
13.4442	1344.42		168.0525		22

Increments within the resonance column are in 64, where roll over appears to occur in a decimal manner that is consistent with the Electron Count Oddities.

Table example



Element	Group	PTE AMU	Calc AMU	HighMark	LowMark	Mean	Variance	Resonance	Octet		H-Mean	Fibonacci Electron Torque	
H	NonMetals	1.0797	2.2428	1.0797	3.1998	2.1398	-2.1201	4.2599	0	-26.5013		1	
He	Noble Gas	4.0026	2.8001	3.9197	3.2795	3.5996	0.6402	64.02	1	8.0025	8.0025	2.0	1.6026E+03
Li	Alkali Meta	6.9390	5.0504	6.7597	5.4793	6.1195	1.9804	128.04	2	16.005	16.005	3	4.7696E+08
BE	Alkaline Ea	9.0122	7.3206	9.6957	7.8791	8.6394	1.9206	192.06		24.0075		4	6.7753E+08
B	Metalloid	10.8110	9.5809	12.4357	9.8789	11.1593	2.5608	256.08	3	32.01	32.01	5	1.1451E+07
C	NonMetals	12.0112	11.0412	13.0787	11.0787	12.0787	3.201	320.1		40.0125		6	6.8950E+06
N	NonMetals	14.0067	14.1014	16.1970	14.2785	15.1951	3.8412	384.12		48.015		7	4.5827E+06
O	NonMetals	15.9994	16.3617	20.5570	16.4783	18.7150	4.4814	448.14		56.0175		8	3.4447E+06
F	Halogen	18.9984	18.6220	23.7997	18.6781	21.2389	5.1216	512.16	4	64.02	64.02	9	2.8423E+06
NE	Noble Gas	20.1700	20.8822	26.6397	20.8779	23.7588	5.7618	576.18		72.0225		10	2.1162E+06
NA	Alkali Meta	22.9898	23.1726	29.4797	23.0777	26.2787	6.402	640.2		80.025		11	1.9007E+09
MG	Alkaline Ea	24.3050	25.4027	32.3197	25.2775	28.7986	7.0429	704.22		88.0275		12	1.5738E+09
AL	Other Meta	26.9815	27.6630	35.1597	27.4771	31.3185	7.6824	768.24		96.03		13	2.0408E+09
SI	Metalloid	28.0860	29.9223	37.9997	29.6771	33.8384	8.3226	832.26		104.0325		14	2.7166E+09
P	NonMetals	30.9738	32.1816	40.8397	31.8760	36.3583	8.9628	896.28		112.035		15	2.2365E+07
S	NonMetals	32.0640	34.4410	43.6797	34.0767	38.8782	9.603	960.3		120.0375		16	1.8073E+07
CL	Halogen	35.4500	36.7041	46.5197	36.2765	41.3981	10.2432	1024.32	5	128.04	128.04	17	1.3936E+07
AR	Noble Gas	39.9480	38.9643	49.3597	38.4763	43.9180	10.8834	1088.34		136.0425		18	1.1263E+07
K	Alkali Meta	39.1020	41.2245	52.1997	40.6761	46.4379	11.5236	1152.36		144.045		19	2.4125E+05
CA	Alkaline Ea	40.0800	43.4859	55.0397	42.8759	48.9578	12.1638	1216.38		152.0475		20	2.5980L+09
SC	Trans Metl	44.9560	45.7461	57.8797	45.0757	51.4777	12.8044	1280.4		160.05		21	2.8430E+09
TI	Trans Metl	47.9000	48.0064	60.7197	47.2755	53.9976	13.4442	1344.42		168.0525		22	2.8073E+09
V	Trans Metl	50.9420	50.2666	63.5597	49.4753	56.5175	14.0841	1408.44		176.055		23	2.9914E+09
CR	Trans Metl	51.9960	52.5268	66.3997	51.6751	59.0374	14.7246	1472.46		184.0575		24	2.9752E+09
MN	Trans Metl	54.9300	54.7869	69.2397	53.8749	61.5573	15.3648	1536.48		192.06		25	3.0187E+09
FE	Trans Ment	55.8470	57.0464	72.0797	56.0747	64.0772	16.005	1600.5		200.0625		26	3.0619E+09
CO	Trans Ment	58.9332	59.3067	74.9197	58.2745	66.5971	16.6452	1664.52		208.065		27	3.1048E+09
NI	Trans Ment	58.7100	61.5669	77.7597	60.4743	69.1170	17.2854	1728.54		216.0675		28	3.1473E+09
CU	Trans Ment	63.5400	63.8272	80.5997	62.6741	71.6369	17.9256	1792.56		224.07		29	3.1894 +09
ZN	Trans Ment	65.3700	66.0875	83.4397	64.8739	74.1568	18.5658	1856.58		232.0725		30	3.2311 +09
GA	Other Meta	69.7200	68.3477	86.2797	67.0737	76.6767	19.206	1920.6		240.075		31	3.1470E+09
GE	Metalloid	72.5900	70.6080	89.1197	69.2735	79.1966	19.8462	1984.62		248.0775		32	3.5815E+09
AS	Metalloid	74.9216	72.8683	91.9597	71.4733	81.7165	20.4864	2048.64	6	256.08	256.08	33	3.6150E+09

Element	Group
Es	Rare Earth
Fm	Rare Earth
Md	Rare Earth
No	Rare Earth
Lw	
Kr	

Element	Group	PTE AMU	Calc AMU	HighMark	Low Mark	Mean	Variance	Resonance	Octet	H-Mean	Fundam:	Electr Torque	
Er	Rare Earth	167.26	151.9774	191.35970	140.4663	169.9130	42.8934	4289.34		536.1675	68	5.2736E+09	[illegible]67E+07
Tm	Rare Earth	168.934	154.2377	194.19970	150.6661	172.4329	43.5336	4353.36		544.17	69	5.2969E+09	[illegible]01E+07
Yb	Rare Earth	173.04	156.4980	197.03970	152.8659	174.9528	44.1738	4417.38		552.1725	70	5.3202E+09	[illegible]
Lu	Rare Earth	174.97	158.7582	199.87970	155.0657	177.4727	44.814	4481.4		560.175	71	5.5350E+09	[illegible]
Hf	Trans Ment	178.49	161.0185	202.71970	157.2655	179.9926	45.4542	4545.42		568.1775	72	5.5562E+09	[illegible]20E+09
Ta	Trans Ment	180.9480	163.2788	205.55970	159.4653	182.5125	46.0944	4609.44		576.18	73	5.5775E+09	[illegible]59E+09
W	Trans Ment	183.8500	165.5390	208.39970	161.6651	185.0324	46.7346	4673.46		584.1825	74	5.5988E+09	[illegible]40E+09
Re	Trans Ment	186.2000	167.7993	211.23970	163.8649	187.5523	47.3748	4737.48		592.185	75	5.6202E+09	[illegible]31E+09
Os	Trans Ment	190.2000	170.0595	214.07970	166.0647	190.0722	48.015	4801.5		600.1875	76	5.6416E+09	[illegible]23E+09
Ir	Trans Ment	192.2000	172.3198	216.91970	168.2645	192.5921	48.6552	4865.52		608.19	77	5.6630E+09	[illegible]15E+09
Pt	Trans Ment	195.0900	174.5801	219.75970	170.4643	195.1120	49.2954	4929.54		616.1925	78	5.6845E+09	[illegible]08E+09
Au	Trans Ment	196.9670	176.8403	222.59970	172.6641	197.6319	49.9356	4993.56		624.195	79	5.7060E+09	[illegible]00E+09
Hg	Trans Ment	200.5900	179.1006	225.43970	174.8639	200.1518	50.5758	5057.58		632.1975	80	5.7275E+09	[illegible]92E+09
Tl	Other Meta	204.3700	181.3609	228.27970	177.0637	202.6717	51.216	5121.6		640.2	81	5.9291E+09	[illegible]84E+09
Pb	Other Meta	207.1900	183.6211	231.11970	179.2635	205.1916	51.8562	5185.62		648.2025	82	5.9488E+09	[illegible]
Bi	Other Meta	208.9800	185.8814	233.95970	181.4633	207.7115	52.4964	5249.64		656.205	83	5.9686E+09	[illegible]
Po	Metalloid	210.0000	188.1416	236.79970	183.6631	210.2314	53.1366	5313.66		664.2075	84	5.9884E+09	[illegible]
At	Halogen	210.0000	190.4019	239.63970	185.8629	212.7513	53.7758	5377.68		672.21	85	6.0083E+09	[illegible]36E+09
Rn	Noble Gas	222.0000	192.6622	242.47970	188.0627	215.2712	54.417	5441.7		680.2125	86	6.0282E+09	[illegible]93E+09
Fr	Alkali Meta	223.0000	194.9224	245.31970	190.2625	217.7911	55.0572	5505.72		688.215	87	6.0481E+09	[illegible]50E+09
Ra	Alkaline Ea	226.0000	197.1827	248.15970	192.4623	220.3110	55.6974	5569.74		696.2175	88	6.0680E+09	[illegible]08E+09
Ac	Rare Earth	227.0000	199.4430	250.99970	194.6621	222.8309	56.3376	5633.76		704.22	89	6.0880E+09	[illegible]66E+09
Th	Rare Earth	232.0380	201.7032	253.83970	196.8619	225.3508	56.9778	5697.78		712.2225	90	6.1080E+09	[illegible]24E+09
Pa	Rare Earth	231.0000	203.9635	256.67970	199.0617	227.8707	57.618	5761.8		720.225	91	6.2966E+09	[illegible]82E+09
U	Rare Earth	238.0300	206.2237	259.51970	201.2615	230.3906	58.2582	5825.82		728.2275	92	6.3171E+09	[illegible]40E+09
Np	Rare Earth	237.0000	208.4840	262.35970	203.4613	232.9105	58.8984	5889.84		736.23	93	6.3357E+09	[illegible]98E+09
Pu	Rare Earth	242.0000	210.7443	265.19970	205.6611	235.4304	59.5386	5953.86		744.2325	94	6.3543E+09	[illegible]07E+09
Am	Rare Earth	243.0000	213.0045	268.03970	207.8609	237.9503	60.1788	6017.88		752.235	95	6.3729E+09	[illegible]
Cm	Rare Earth	247.0000	215.2640	270.07970	210.0607	240.4702	60.819	6081.9		760.2375	96	6.3915E+09	[illegible]
Bk	Rare Earth	247.0000	217.5251	273.71970	212.2605	242.9901	61.4592	6145.92		768.24	97	6.4102E+09	[illegible]07E+09
Cf	Rare Earth	249.0000	219.7853	276.55970	214.4603	245.5100	62.0994	6209.94		776.2425	98	6.4289E+09	[illegible]35E+09
Ho	Rare Earth	164.93	149.7172	188.51970	146.2665	167.3931	42.2532	4225.32		528.165	67	5.2501E+09	