Abstract:

The greatest difficulty in determining the true nature of our reality is the fact that there are causes and effects that are impossible to observe. By classifying these necessary dynamics as "dark" or "entangled", we have accepted the improbability of their observation without understanding the consequence of this condition. The four forces we fundamentally accept, are a juxtaposition of the same displacement. The fifth force suggested by recent collider experiments is not newly discovered. Instead, it is a new perspective of the force assumed to be the strong nuclear. The chiral cousins, electricity and magnetism, were merged by Maxwell with the equation $\varepsilon_o \mu_o = \frac{1}{c^2}$. The force we cannot observe is similarly chiral with gravitation. Dark gravitation, $\boldsymbol{D_g}$, cannot be directly observed, but its effects are apparent in the inconsistencies with the quantum and cosmological models. The equation $\boldsymbol{G \cdot D_g = c^2}$ reunifies the two models.

Introduction:

Imagine a river that is flowing opposite directions simultaneously. Now separate the river into two by the direction of flow and imagine yourself in the void between them. Protons are rocks in the outward river. Electrons are rocks in the inward river. Photons are whirlpools, eddies, fixed in the outward river. Neutrinos are whirlpools, eddies, fixed in the inward river. Each of these are four dimensional objects that we never directly observe.

As protons interfere in outward flow, they generate a ripple in the outward river (a gravitational wave), and an absence of flow from the displacement (the positive charge). As electrons interfere in inward flow, they generate a ripple in the inward river (a dark gravitational wave), and an absence of flow from the displacement (the negative charge).

Quantum Entanglement:

We are entirely incapable of directly observing the inward river. A dark gravitational wave propagates backward in time from our perspective. This is

responsible for the instantaneous effects of quantum entanglement, but these effects are only instantaneous from our perspective. In fact, a dark gravitational wave, the information, propagates at the same rate as a gravitational wave. This may be called dark matter, and the dark gravitation evident in universal expansion may be called dark energy, but these terms have been used to perpetuate a cosmological and atomic model that is clearly flawed.

Time:

Time is a relative construct of three-dimensional observation. Four-dimensional *Flow* occurs in a timeless state, or more accurately, a state with an infinite density of time. When ascribing a velocity to this Flow, we are observing the periodic reduction of this timeless state (superposition) to a coherent state measurable as our reality. The unit of time, the second, is an arbitrary choice. Though standardized by the observation of Cesium 133, it is merely an agreed upon interval of observation. This is useful but is not itself a definition of Time. Time is bidirectional and proceeds backward in the inward river [10].

Distance:

Linear distance is deterministic from the periodic reduction from universal superposition, but during coherence the intensity of two gravitational waves are amplified by one another. Gravity, and its dark cousin, are constants of this amplification, but we are not able to observe this phenomena from that timeless perspective.

Three-dimensional observation is a first derivative state in terms of dimension and a first integral state in terms of time. Upon each reduction from universal superposition, the objects are closer, the amplification is greater, and the effect is observable as acceleration.

When a four-dimensional object moves toward or away from another four-dimensional object, the 'distance' between two objects is actually an area. One dimensional and non-dimensional geometry does not exist except by human observation. The foundational fundamental of geometry is a circle not a point. A

change in area can be observed from one reduction to another from a three-dimensional perspective as linear, but that motion is never linear. Any linear effect has an equivalent effect perpendicular to the linear observation.

Mass and Time Density:

Mass is an indirect measure of a four-dimensional object that accounts for three dimensions of *capacity* (m^4). The actual unit of a gram is cubic meters. The actual unit of a Coulomb is cubic meters. When temperature and amperage are viewed as the inverse measure of *time density*, all of the phenomena in physics and chemistry fall into categories solely based on the units meters and seconds (See Appendix A). Time density is seconds per meter cubed, and its inverse, temperature, is meters cubed per second.

The radius of an object with mass is the necessary context for a complete description of a four-dimensional object. Three-dimensional size and linear distance are relative to this complete description. Think of the progression from supermassive-star, to neutron star, to black hole. Any object with a miniscule mass would be considered a black hole with a sufficiently small radius completing the description.

Normalization:

Reductions using temperature or amperage as (m^3/s) and grams or Coulombs as (m^3) yield a normalization of units to distance and time (See Appendix A). Force can be viewed as quartic meters per seconds squared (m^4/s^2) and understood as the change in time density from an object's Flow displacement. Energy can be viewed as the change in the observable position of that displacement, or quintic meters per seconds squared (m^5/s^2). Power can be viewed as the rate of change in the observable position of a displacement (m^5/s^3). Joule Seconds, the unit of Planck's constant, reduces to quintic meters per second (m^5/s). This unit may simply be viewed as the inherent inertia of a four-dimensional object from a three-dimensional perspective.

Flow:

The proposal in Appendix C for a polar quaternion description of reality allows for overlapping yet exclusive three-dimensional vector spaces. The fluctuation of a localization between the possible 3D spaces is a holographic rotation of that localization. The four quadrants of this rotation describe the four infinite universes that co-exist, overlap, and indirectly interact.

The positive outward universe consists of protons in the positive outward river and electrons in the negative inward river. The positive inward universe consists of protons in the negative outward river and electrons in the positive inward river.

The fluctuation of a localization is observable from one period of coherence to another. From our derivative perspective, the linear distance real space rotates in one second is 299,792,458 meters. Flow is the rotation of space. Interference in Flow is responsible for all other forces, phenomena, and fabric effects.

Constants:

Planck's constant is a measure of the inherent velocity (inertia) of a proton. Notably, in a paper from Pohl et. al in 2010 [1], it was predicted that Planck's constant equals π/2, multiplied by c, multiplied by the mass of the proton, then multiplied by the radius of the proton. In terms of this hypothesis, that is the arc length of the positive outward rotation, multiplied by the speed of the rotation, multiplied by a four-dimensional description of a proton.

Recent studies of the radius of a proton changed its assumed value by 5% and placed this equation firmly in the range of observation ($0.833 \pm 0.010 \times 10^{-15}$ meters from Bezginov et al. 2019)[2]. The bridge between Einstein and Planck is the equation E=hf. Following this logic, we can then determine the periodicity of the reduction from universal superposition to tangible three-dimensional reality.

$$f_u \cdot \frac{\pi}{2} \cdot c \cdot m_p \cdot r_p = m_p c^2$$

This round-about way to approximate the frequency of the universe, f_u, can be defined as an exact value once the concepts of time and temperature are merged.

The Boltzmann constant defines the thermodynamics of displacement. The effect of displacement can be observed as black body radiation. The river has an infinite time density and is absolutely zero degrees Kelvin. Time is subtracted from this ocean when interference in Flow occurs. The subtraction of time lowers time density and is measurable as heat. Time density (s/m^3) is lowered when time is reduced, or volume is increased.

We naturally began to measure inverse time density, temperature, from the expansion of a material, like mercury. We measure inverse time density, amperage, by measuring voltage across a known resistance. This is the corollary of measuring temperature by measuring the pressure exerted by material with a known specific heat capacity (See Appendix A). Current does not produce heat. Heat does not produce current. They are two sides of the same coin. Since specific heat capacity and resistance normalize to the same dimension (1/ms), one can force the specific heat capacity to approach 0, supercool, and thereby force the resistance to approach 0.

The unit of the Boltzmann constant, k_b, normalizes to meters squared per second (m^2/s) and is the quanta of the velocity of an area. More appropriately, it is the amount that an area slows down due to the displacement from a single object. When multiplied with the frequency of that slowing, f_u, it yields the immutable constant π . An area decelerates by π (m^2/s^2) from each displacement. That is why pi is pi.

The radius of a single electron in hydrogen stasis was approximated from the equations and is aligned with Bohr's approximation of 53 picometers that is expected to be 1.5 times greater due to the long tail of the radial wave function.[3] The constants c and π are immutable. The proportional relationship between k_b and f_u , that equals π , must remain in balance. The proportional relationships between the constants ($\varepsilon_o,$ $\mu_o,$ $G,$ D_g) and c^2 must remain in balance. The most mutable constants listed are the radius of a proton and the radius of an electron which change in molecular structure to maintain the balance between all other relationships.

Constant	Value	Normalized Dimension
c The Observable Linear Velocity of Real Space	299,792,458	$\dfrac{m}{s}$
k_b Boltzmann Constant	1.380649 E-23	$\dfrac{m^2}{s}$
$k_b * f_u = \pi$ Deceleration Constant The amount an area constantly slows due to displacement	3.141592653…	$\dfrac{m^2}{s^2}$
f_u Universal Frequency The frequency of coherence.	2.275446265 E 23	$\dfrac{1}{s}$
h_o Ideal Inertia of a proton	$h_o = \dfrac{\pi}{2} \cdot c \cdot m_p \cdot r_p$	$\dfrac{m^5}{s}$
T_{gs} Tension of Galactic Space	$\dfrac{h}{h_o} = T_{gs} \approx 1.003$	None
r_p The Radius of a Proton	$8.387533\,E-16$	m
r_h The Radius of a single electron in Hydrogen Balance	$7.793062\,E-11$	m
G Gravitational Constant	6.67340 E -11	$\dfrac{1}{s^2}$
ε_o Electrical Constant Permittivity	8.8541878128 E -12	s^2
μ_o Magnetic Constant Permeability	1.25663706212 E -6	$\dfrac{1}{m^2}$
D_g Dark Gravitational Constant	1.346590938 E 27	m^2
K_e Coulomb's Constant	8.9875517923 E 9	$\dfrac{1}{s^2}$

Equations:

$$E = hf \ \ \&\& \ \ E = mc^2 \ \ \&\& \ \ \ h_o = \frac{\pi}{2} \cdot c \cdot m_p \cdot r_p$$

$$\therefore \ \ f_u \cdot \frac{\pi}{2} \cdot c \cdot m_p \cdot r_p = m_p c^2$$

Since, $\ k_b * f_u = \pi$

$$f_u = \frac{2c}{\pi r_p} \ \ \&\& \ \ k_b = \frac{\pi^2 r_p}{2c}$$

Assuming, $\ \ \dfrac{K_e}{G} = \dfrac{c^2}{\pi^2} \cdot \dfrac{r_h}{2\pi r_p} \ \ \&\& \ \ e \approx \dfrac{c}{\pi} \cdot m_p \cdot T_{gs}$

We Conclude:

Constant	Radius Ratio	Frequency	Boltzmann
ε_o	$\dfrac{\pi^2}{c^2} \cdot \dfrac{r_p}{r_h} \cdot \dfrac{1}{2G}$	$\dfrac{1}{f_u} \cdot \dfrac{\pi}{cr_h} \cdot \dfrac{1}{G}$	$k_b \cdot \dfrac{1}{cr_h} \cdot \dfrac{1}{G}$
μ_o	$\dfrac{2}{\pi^2} \cdot \dfrac{r_h}{r_p} \cdot G$	$f_u \cdot \dfrac{r_h}{c\pi} \cdot G$	$\dfrac{1}{k_b} \cdot \dfrac{r_h}{c} \cdot G$
G	$\dfrac{\pi^2}{2} \cdot \dfrac{r_p}{r_h} \cdot \mu_o$	$\dfrac{1}{f_u} \cdot \dfrac{c\pi}{r_h} \cdot \mu_o$	$k_b \cdot \dfrac{c}{r_h} \cdot \mu_o$
D_g	$\dfrac{2c^2}{\pi^2} \cdot \dfrac{r_h}{r_p} \cdot \dfrac{1}{\mu_o}$	$f_u \cdot \dfrac{cr_h}{\pi} \cdot \dfrac{1}{\mu_o}$	$\dfrac{1}{k_b} \cdot cr_h \cdot \dfrac{1}{\mu_o}$

K_e	$\dfrac{c^2}{\pi^2} \cdot \dfrac{r_h}{r_p} \cdot \dfrac{G}{2\pi}$		$\dfrac{1}{k_b} \cdot c r_h \cdot \dfrac{G}{4\pi}$
	$\varepsilon_o \cdot \mu_o = \dfrac{1}{c^2}$	$G \cdot D_g = c^2$	$\varepsilon_o \mu_o G D_g = 1$
	$E \approx e * \dfrac{\pi}{c} * \dfrac{1}{\varepsilon_o \cdot \mu_o}$	$E = m_p * G \cdot D_g$	

The Strong Nuclear Force:

The three-dimensional stasis of the hydrogen atom is the balance of all four effects from the displacement of Flow. The outward wave from the proton is balanced with the inward wave from the electron only at a scale small enough for the electron to appear to be on the three-dimensional exterior of the proton. In this stasis, the effect of Dark Gravitation becomes apparent, and while we still do not directly observe this force, we assume that it must exist on that small scale for a nucleus to remain contained. The strong nuclear force is projected to be approximately 10^{38} times larger than the gravitational force.[4] In this context, that is precisely what we see from the fundamental constant. $D_g \approx G * 2.02E37$

Fusion and Anti-Matter:

The suction, the pressure of space in a volume, otherwise known as the charge, is also in balance. An absence of outward flow acts equivalent to inward flow. An absence of inward flow acts equivalent to outward flow. The pressure of space in a volume is completely neutralized by the overlap of these voids. This stasis allows the outward and inward rivers to flow around and through the

atomic structure. This balance generates the very idea of three-dimensional location. A tangible point.

Suction can be continuously combined. Fusion is the forced overlap of more protons and electrons. Neutrons are a proton/electron pair that has been subsumed by the external atomic structure. Since the electron interferes in inward flow it interacts with the absence of outward flow. Since the proton interferes in outward flow, it interacts with the absence of inward flow. Essentially, a neutron is a proton inside the charge of an electron and an electron inside the charge of a proton.

When these charge vortices aggregate into a suction superstructure where the displacement exceeds the distance space rotates, the conditions become possible for fusion into more complex atomic structures. At this stage, the suction superstructure, a star, draws the river toward the vortex rather than just interfering in flow. This reversal pulls proton and electron pairs into the vortex. The sublimation of the pair is what we call a neutron, but beta decay makes it abundantly clear that, absent an atomic structure that can sustain the sublimation, the proton and electron return to their rivers. When an electron is expelled into the outward river, a positron is released. Likewise, when a proton is expelled into the inward river, an anti-proton is apparent. There is no matter antimatter asymmetry. From an inward perspective, in the inward direction of Time, everything is antimatter.

The Atomic Model:

Atoms are not constructed in the manner to which we have been accustomed. The electron cloud with a nucleon core is an observational illusion. The electron's sphere of displacement moves inward and backward in time. The protons sphere of displacement moves outward and forward in time. When we make an observation of an atom from a present perspective it is always a measure of the electrons past effect. Accordingly, we encounter electron layers on the outside and proton layers on the inside, but that is not the four-dimensional construction of an atom.

The observable radius of a proton, r_p, and the observable radius of an electron in balance with a proton, r_h, is a part of the complete four-dimensional description of the objects. The relative three- dimensional observation is not the determinant of the four-dimensional size or position. *The electron and proton have an equal displacement in opposite rivers*. The atomic model looks more like a Russian nesting doll with balanced layers of protons and electrons.

The mass of an electron is the shadow, the reverberation, of its interaction with Dark Gravity. In a recent experiment designed to test the standard model, the data clearly shows that the production of muons and electrons are not equivalent when conditions suggest they should be.[6] Researchers have even announced this may be due to a new unknown force. That force is Dark Gravitation and a muon is an electron orientation that produces a larger shadow which predictably decays. Producing that orientation fights against Dark Gravitation and produces the mass disparity and decay model.

The proton/electron pair that is sublimated by atomic structure, a neutron, is in the suction of the structure rather than in the river. Accordingly, the neutron does not create its own charge, but it does distort and displace the vortex in which it is enveloped. That distortion is considered the mass of the neutron, but it is not a meters cubed correlation. A neutron generates a vector of distortion that is circular, not spherical. A pair of neutrons is geometrically equivalent to a line segment from a three-dimensional perspective. That is why most stable isotopes have an even number of neutrons.

When one is created, it is compressed into sublimation and sheds angular momentum into the outward river, photons. When it decays, a neutron sheds angular momentum into the inward river, neutrinos. Chemistry, organic or otherwise, is shape based due to the neutron pairs. (See Appendix B)

The Standard Model:

Quarks are not the building blocks of matter. The periodic reduction of universal superposition gives the universe a frequency. A harmonic analysis leads to windows of potential products from the destruction of nucleons that can exist between reductions. Leptons do not present as hadrons because the products of

their destruction are in the inward river and cannot be observed. Generating artificial flow with massive magnets and smashing nucleons with the intention of creating a harmonic state will produce predictable and repeatable results.

Fermi first noticed inconsistencies with meson theories and the erratic results from cosmic ray and collider experiments. Murray Gell-Mann noticed the harmonic pattern and proposed the quark. This model has governed further experimentation. Now, we design experiments to align with a harmonic state and claim that we are discovering particles. We are smashing rocks.

If you design experiments to align with the harmonic pattern Gell-Mann observed, you will produce consistent results, but that does not mean that the particles themselves are building blocks. It only means that you can create semi-stable states for the broken pieces in an environment of controlled Flow.

Unsurprisingly, the most stable three-dimensional state is when you break a four-dimensional object into three pieces. Dimensionally this is equivalent to taking a sphere defined by the x,y,z,w axes and breaking it into one of three pieces. An x,y,w piece, a y,z,w piece, and an x,z,w piece. Since the w component is necessarily complex, it can present as w^+ or w^-.   These six clean breaks are just up, down, charm, strange, top, and bottom as defined relative to one another. These quarks are not building blocks, they are the result of breaking the same thing the same way and discovering the same pieces.

The other combinations are just variations on theme. You can cleanly break a nucleon into as many as six parts. So far, we have gotten to five.[7] There can be a x,w^+ piece, a x,w^- piece, a y,w^+ piece, a y,w^- piece, a z,w^+ piece, and z,w^- . Since the complex component is required for a fermion to exist between reductions, that is the absolute limitation of our hadron smashing phase.

Light:

While individual photons are quantized, they are never separated. Bell's inequality tests and entangled photon experiments abound. The consistent conclusion is that the quantum state of photons are intertwined and not individual.[8] A photon is a field, but presents as set of particles when observed. Rivers and oceans are nice analogies for visualization, but four-dimensional Flow

is not something the human mind can picture. It violates every natural assumption the mind uses to project reality. It moves through zero and infinity as though they are the same space.

Eddies in the river have a three-dimensional manifold that appears to move with the speed of the river in the opposite direction. This is the most difficult illusion to understand. ***Photons are stationary.*** Matter moves with the speed of the river minus the aggregate interference of the suction superstructure to which it belongs. Galactic space + Solar Space + Planetary Space + Body Space + Atomic Space. That deceleration is relative to the local Flow. The global Flow is unaffected by the variation. The river has an infinite depth, the density of time is endless.

The observed emanation of light is omnidirectionally outward. The eddy is in the outward river, but matter in the river moves past the eddy with the global Flow. When I move away from an object, it can appear the object is moving away from me. The outward projection of light is actually an inward, backward in time, motion that is visible from the positive outward perspective. It is as close as we can get to observing inward Flow. The creation of an eddy is the compression of space to the localization of creation. This occurs from the infinitely large sphere and proceeds inward like a deflating balloon.

Our future is the photons past. The compression, the deflation of space, has already moved through all future obstacles at the observed instance of emanation. Any energy absorbed or reflected along the way was in response to the ripple but has not occurred yet from our perspective.

The observation of a photon is the compression moving backward along its path. As the fabric compresses, it folds in on itself. The convergences are the set of particles currently classified as quantized photons. The incidence of convergence depends on the intensity of the compression. The number of folds per second is the observable frequency of light. A fold in positive outward space is a momentary negation of outward Flow. The absence of outward Flow mimics inward Flow. Electrons interfere with inward Flow thus interact with the folds. Neutrinos are folds in positive inward space that electrons cannot interact with except indirectly due to proton perturbations.[9]

The linearized visualization is waterspout rising from the river. The black hole at the center of galactic space is anchored to the river and flowing with it at the full rate. Solar space is a whirlpool in the side wall of the waterspout and planetary space is a whirlpool in the side wall of solar space. The total deceleration of the body space from which we observe is all angular. The waterspout moves past an eddy, a photon field, at the same rate no matter the local condition within the waterspout.

Black Holes and The Big Bang:

When the interference of an atomic superstructure is greater than the local Flow, the river is not just pulled toward the structure. From our perspective it appears to stop, but the event horizon is an inversion of Flow direction. Outward becomes Inward, and Inward becomes Outward, at this threshold. The matter which has been compressed in the Outward Universe is then on exterior of the Inward Universe. The matter entering a black hole in the Outward Universe would be observable as cosmic background radiation in the Inward Universe. Over time that matter coalesces into galactic space in the Inward Universe with a *white hole* at the center. The event horizon of a white hole inverts Flow in the same manner as a black hole. The matter entering a white hole in the Inward Universe is observable as cosmic background radiation. Over time that matter coalesces into galactic space in the Outward Universe with a black hole at the center. This cycle has always existed. This cycle will continue forever. There is no beginning. There will be no end.

Four Overlapping Infinite Universes:

The fundamental constants, $G, \varepsilon_o, \mu_o, and\ D_g$, are the coefficients that take our three- dimensional observations and place a measurement in terms of four-dimensional displacement. When combined for a complete picture they negate themselves, they equal 1, but from a perspective that can only observe three of the forces in a perpendicular juxtaposition they create the concepts of time, distance, mass, and charge.

$\mathbb{R}$ (Outer Surface)

0	D_g	G	μ_O
G	0	μ_O	ε_O
D_g	ε_O	0	G
ε_O	μ_O	D_g	0

Row labels (left): $k_{2\text{-}}$, $i\text{-}$, $k_{1\text{-}}$, $j\text{-}$

Column labels (bottom): k_1 j k_2 i 0 (Inner Surface)

Without all forces negating themselves, four three-dimensional manifolds are possible. Each can be defined by the force which they lack. We exist in the universe that lacks dark gravity (i). The universe that lacks gravity is the mirror of our own referred to as the inward or antimatter universe (j). In the antimatter universe, the arrow of time is reversed, a cloud of protons appears to orbit a nucleus of electrons, but the dynamics are otherwise the same. The (k) manifolds are similarly chiral cousins but there is no cohesion for tertiary dynamics. They are the electrical field and magnetic field 3D manifolds labeled as k_1 and k_2 respectively.

Two four-dimensional manifolds are represented by the diagonals of the matrix. The $\mathbb{R}$ is the electromagnetic medium through which they all may interact. The other diagonal is the Zero-Manifold which defines localization and separation. The diagonals can be represented mathematically by 0 and ∞.

Conclusion:

$$\varepsilon_o \;=\; k_b \cdot \frac{1}{cr_h} \cdot \frac{1}{G} \;(s^2) \qquad\qquad \mu_o \;=\; \frac{1}{k_b} \cdot \frac{r_h}{c} \cdot G \qquad \left(\frac{1}{m^2}\right)$$

$$G \;=\; k_b \cdot \frac{c}{r_h} \cdot \mu_o \;\left(\frac{1}{s^2}\right) \qquad\qquad D_g \;=\; \frac{1}{k_b} \cdot cr_h \cdot \frac{1}{\mu_o} \;(m^2)$$

$$\varepsilon_o \cdot \mu_o = \frac{1}{c^2} \left(\frac{s^2}{m^2}\right) \qquad G \cdot D_g = c^2 \left(\frac{m^2}{s^2}\right)$$

$$\varepsilon_o \mu_o G D_g = 1 \; (dimensionless)$$

The juxtaposition of four three-dimensional manifolds, where observation is impossible if all four forces are apparent, creates the illusion of difference and change. Dark gravitation cannot be directly observed from our perspective but is apparent as the strong nuclear force and as the 'dark' force driving universal expansion. Time is bidirectional. An antimatter universe where the arrow of time is reversed coexists and overlaps with our own.

Local time density is lowered by the interference of a proton or electron in Flow and is observable as heat. Neutrons are a proton/electron pair that has been subsumed by the greater atomic structure. **Photons and Neutrinos are stationary**. All of the phenomena in physics and chemistry can be described solely with the units of distance and time. The fundamental constants are interchangeable since they are observations of the same cause from perpendicular perspectives.

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Appendix A : Normalization

Category	Presentations with Normalization	Definition
$\dfrac{m^5}{s^3}$	Power, Watt, Radiant Flux, Radiant Intensity	Rate of change in the observable location of a displacement
$\dfrac{m^5}{s^2}$	Joule, Energy, Moment of Force, Work, Amount of Heat	Change in the observable location of a displacement
$\dfrac{m^5}{s}$	Planck's Constant, Action	Inherent Inertia $$h_o = \frac{\pi}{2} \cdot c \cdot m_p \cdot r_p$$
m^4	$\dfrac{Mass^2}{radius^2}$ OR $\dfrac{Mass_1 * Mass_2}{distance^2}$ $\dfrac{Charge^2}{radius^2}$ OR $\dfrac{Charge_1 * Charge_2}{distance^2}$	Capacity OR Relative Capacity Mass is the measure of the wave generated by a displacement. Charge is a measure of the absence of Flow from a displacement.
$\dfrac{m^4}{s^4}$	OBJECT IN FLOW	REAL STATE Dual Arrow of Time
$\dfrac{m^4}{s^2}$	Newton, Force	Displacement of Flow Single Arrow of Time
$\dfrac{m^4}{s}$	Momentum	Derivative Inertia $Mass * Derivative\ Velocity$ $Charge * Current\ Density$
m^3	Mass(kg) Charge(C)	Projection Manifolds of Capacity Derivative Observable States
$\dfrac{m^3}{s}$	Temperature , Amperage	Inverse Time Density

$\dfrac{m^3}{s^2}$	Surface Tension	$Pressure * Derivative\ Distance$ $Voltage * Electric\ Flux\ Density$
$\dfrac{m^3}{s^3}$	Heat Flux Radiance, Irradiance, Radiance	$Pressure * Derivative\ Velocity$ $Voltage * Current\ Density$
m^2	Dark Gravitational Constant	D_g
$\dfrac{m^2}{s^2}$	Pascal, Pressure, Strength, Volt, Absorbed Dose, Specific Energy, Energy Density	Acceleration/Deceleration of Area $quanta = k_b * f_u = \pi$
$\dfrac{m^2}{s}$	Boltzmann Constant, Magnetic Flux, Weber, Magnetic Field Strength, Dynamic Viscosity, Heat Capacity, Entropy, Ideal Gas Constant	$Areocity$ k_b
m	Surface Charge Density, Electric Flux Density,	Derivative Distance
$\dfrac{m}{s}$	Current Density	Derivative Velocity
$\dfrac{m}{s^2}$	Thermal Conductivity, Electric Field Strength,	Derivative Acceleration
ms^2	Capacitance	$Derivative\ Distance * Permittivity$
$\dfrac{1}{m}$	Inductance, Wavenumber	$\dfrac{Magnetic\ Flux}{Amperage}$ OR $\dfrac{Heat\ Capacity}{Temperature}$
$\dfrac{1}{ms}$	Resistance, Ohm, Specific Heat Capacity, Specific Entropy	$Wavenumber * Frequency$ $\dfrac{Pressure}{Temperature}$ OR $\dfrac{Voltage}{Amperage}$

$\dfrac{1}{m^2}$	Permeability*, Magnetic Constant	U_o
$\dfrac{1}{s}$	Hertz, Tesla, Frequency, Angular Velocity	f_u
$\dfrac{1}{s^2}$	Gravitational Constant, Angular Acceleration, Coulomb's Constant	G K_e
s	$\dfrac{Temperature}{Pressure} * \dfrac{1}{distance}$	$\dfrac{Amperage}{Voltage} * Inductance$
s^2	Permittivity, Electrical Constant	ε_o
$\dfrac{1}{s^4}$, s^4	FLOW, Time	Timelessness (Infinite Time Density)

The natural states of an object are the rows highlighted in blue. The root states of an object are highlighted in green. The table is organized by the integral and derivate distance states. The bottom rows, highlighted pink, are the Time states. From a three-dimensional perspective, the Flow displacement from a four-dimensional object (Force) can change position (Energy), and the rate of that position change can be measured (Power). The inertia can be derived as the quanta of action (Plank's).

All other states are relative to one another. Direct calculations from normalized states may lack required ratios. For example, Volume is not listed. It is an obtained ratio that then gives context to the greater local state.

Seconds are defined by two conditions which are naturally in balance but can be imbalanced by human intervention. We do it every time we turn on a light. The temperature, pressure, and distance side of the equation must be

balanced by the voltage, amperage, and inductance side of the equation. An imbalance, natural of otherwise, is literally a Time differential.

The radius of an electron in molecular statis is deterministic not fixed, but the rest of the equations that depend upon its value must remain balanced. When all other diffusion methods are constrained, the Time differential subtracts from the frequency of coherence. Consequently, the radius of the electron excited by the Time differential jumps to a radius that restores harmonic balance for the given condition. This distance differential is subsequently balanced by a compression of real space. In the conversion, the Time differential is shed into the river as angular momentum, an eddy, a photon field, and the electron returns to its statis state.

Timeless defined above as $1/s^4$ is akin to 2π. The state is both the maximum and minimum and is equivalent to s^4 which is akin to 0. The first derivative state $1/s$ indicates the origin of Euler's number. Meaning that timelessness may also be relatively defined as the natural log of s where the first derivative state of observation, per second, and the first integral state, seconds, are inexorably tied to Euler's constant.

Appendix B : Neutron Crystallography

A pair of neutrons is geometrically equivalent to a line from a three-dimensional perspective. The neutron lines are held in relationships with other neutron lines by the greater atomic structure. The electron orbitals mirror this fine structure. The visualization is a set of hinges being held in perpendicular position by rubber bands.

Two neutron lines hinged together want to rest flat and separate (The Weak Force).   Ideally, the hinge bands hold all the neutron lines at right angles. Fusion can collapse an x,y,z axis set into a plane consisting of six neutrons. The progression of atomic radius is due to this condition. Carbon can be viewed as three neutron lines connected at an origin to form an x, y, z set of axes. The addition of neutrons aligned with the complex axis starts to fold the set of real axes. Oxygen has one neutron line aligned with the complex axis (w^+). The complex axis is bidirectional and needs 4 neutrons to complete the fold of the x, y, z set into an xyz plane that is perpendicular to the $w^{(-+)}$ line…Neon.

The even neutron states are the ideal. Many come in chiral flavors folded inward or outward. Boron can be represented as an x^- , y^- , z^- set of axes. The ideal chiral pairs progress from there. Na/Mg, Al/Si, P/S. When a set of axes is fully folded, the direction becomes moot, and the chirality ceases as Chlorine collapses into Argon. K/Ca continues the trend but with several sets to build before folding, transition metals, the ideal trend becomes obfuscated by the complexity of potential states.

The final folded form, Radon, is a closed shape. Gold has an open face. Any neutrons added beyond the 118 in Gold contribute to closing the shape. Further additions lock into Lead rather than allowing the collapse of the full shape. A closed shape creates a true vacuum. Nature abhors a vacuum. Technetium wants to collapse into a closed shape, and it wants to be a noble gas, but it cannot sustain the true vacuum inside the neutron shape.

Chemically, hinge bands can be shared, moved, or pulled. Water is the ultimate loose hinge band robin hood. More appropriately the molecular structure of Oxygen and the nature of hydrogen allow this condition. Hydrogen (Protium) is not an element, it is a statis state. Hydrogen can act as an additional half-hinge band. A hydrogen quartet can act as a line. The Oxygen real axis set is

not fully folded and can be compressed with the addition of Hydrogen hinge bands. OH, H_2O, H_3O allows hinge bands to be stolen, stored, and transferred. H_4O completely collapses Oxygen into a Neon form and requires extreme conditions.

Fusion locks the hinges and bands into plateaus of symmetry where the neutron lines are ideally at right angles and the hinge bands share state. The shared state either requires more tension toward the proton side or toward the electron side of the bands (Ionic Charge). A hinge band wants to be the size of hydrogen, it wants to reach its statis state. An inflation past hydrogen statis increases the tension used to hold the neutron lines in place. The bands may be completely slipped off with the addition of enough inverse time density (temperature/amperage) which expands the bands into a plasma state. The opposite is also true, where the bands can be forced to be too tight for the structure and slip off (Bose-Einstein condensate).

The atomic model includes fibbonacchi layers of protons and electrons represented by the outer circles. Since each arc is representative of the three dimensional displacment from a four dimensional object, one should not expect the layer to exactly match the common electon shell convention. That said it does share much with the model. The first layer is always filled. The structure favors filling the outer layer if a sequence of filled inner layers is available. All noble gases have a sequence of fully filled layers Ne:[2,3,5], Ar:[2,3,5,8], Kr:[2,13,21], Xe:[2,5,13,34], Rn:[2,3,5,8,13,21,34]. But a noble gas must also have a collapasable state as described in the following diagrams. Technetium, at 43 protons, lacks a filled state, but the bands want its 56 neutrons to fold perfectly. Gallium:[2,3,5,8,13] has a filled state but the neutron shape resists collapse. Chlorine-37 is used to detect neutrinos because it is tettering on the edge of collapse but does not have enough hinge band strength to complete the collapse. When excited by a neutrino, a proton from the '5' layer jumps to the '8' layer providing conditions similar to a filled state. The result is an Argon presentation of the element that decays with an emmision of a neutrino in the same way an electron excited by photon emits a photon upon decay.

The Nue Atomic Model
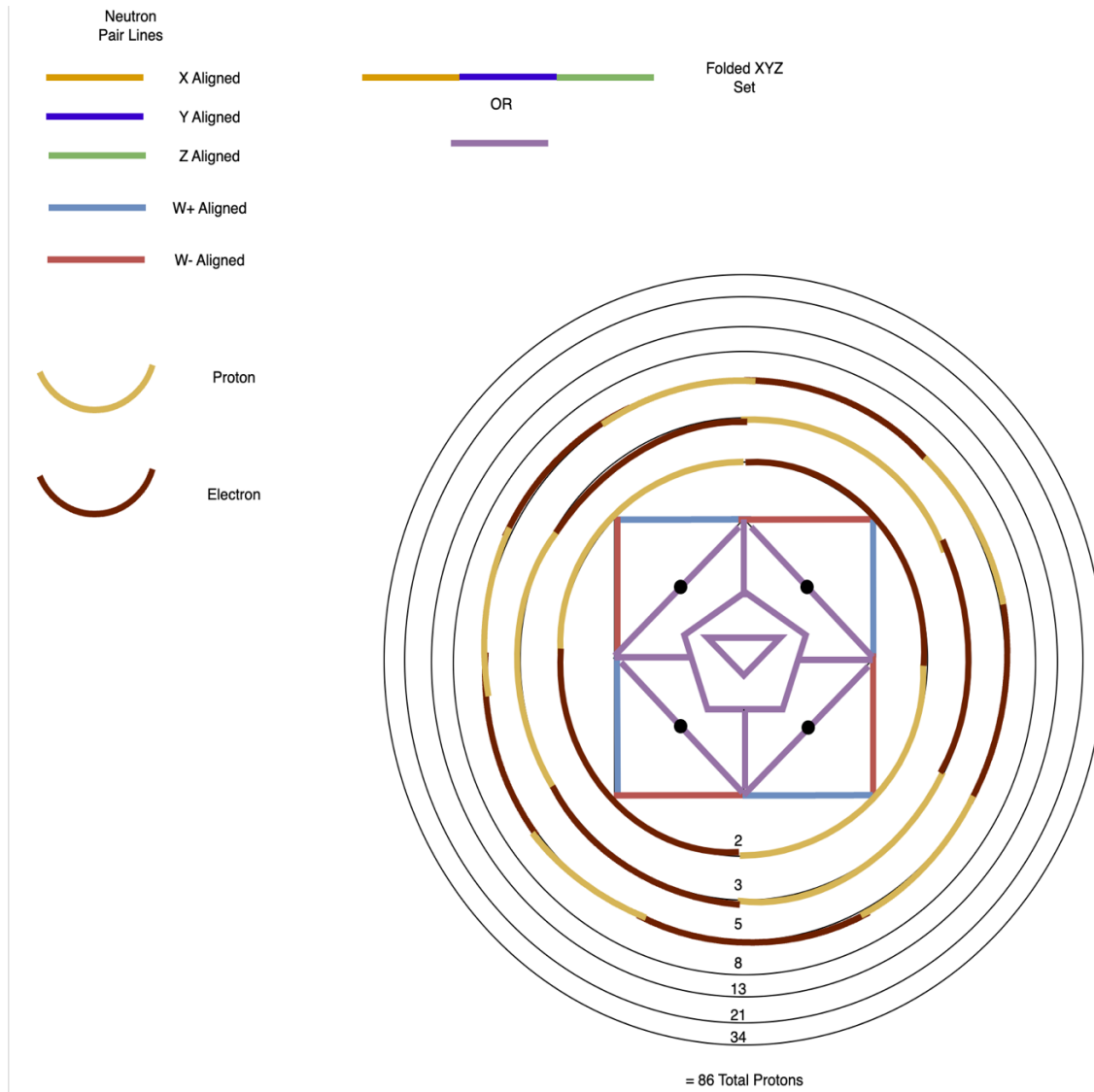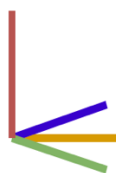
X Aligned

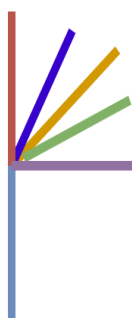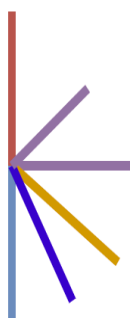Y Aligned

Z Aligned
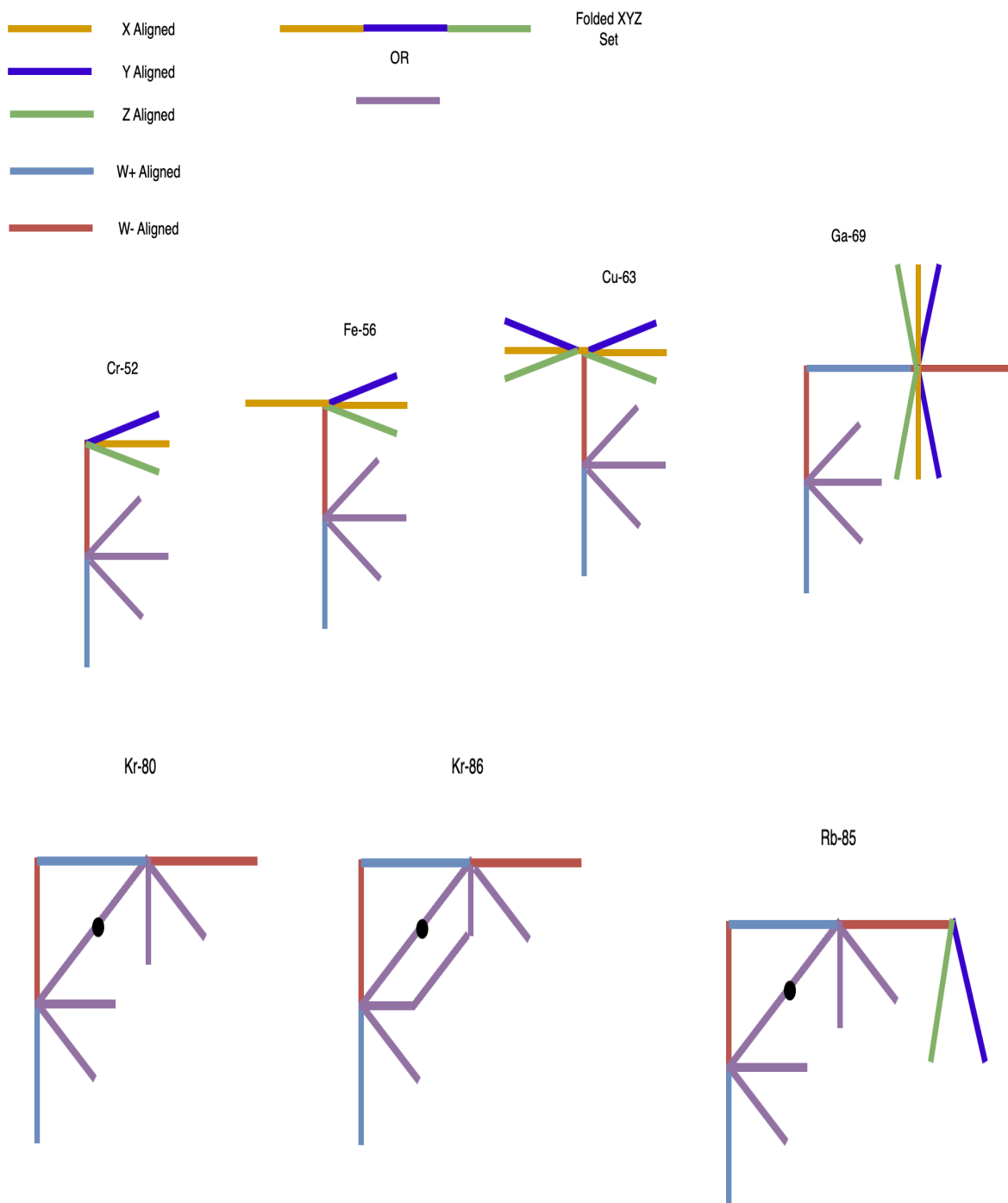
W+ Aligned

W- Aligned

Folded XYZ Set

OR

Cr-52

Fe-56

Cu-63

Ga-69

Kr-80

Kr-86

Rb-85

X Aligned

Y Aligned

Z Aligned

W+ Aligned

W- Aligned

Folded XYZ Set

OR

Mo-98

Tc-99

Ag-107

Sn-115

Xe-132

Cs-133

X Aligned

Y Aligned
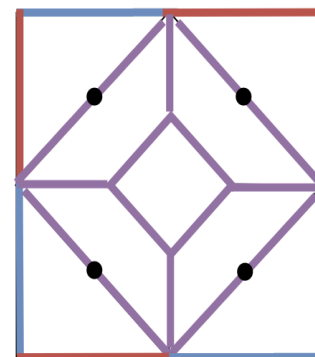
Z Aligned

W+ Aligned

W- Aligned

Folded XYZ Set

OR
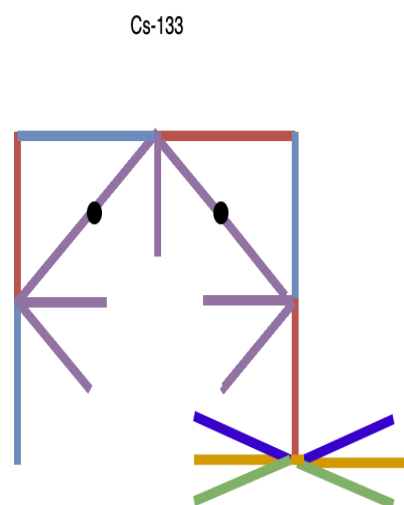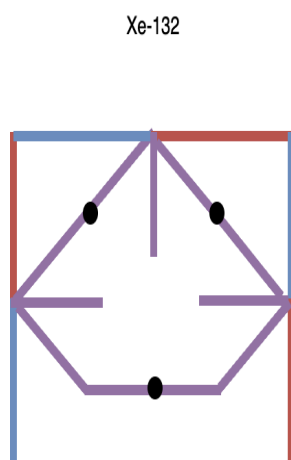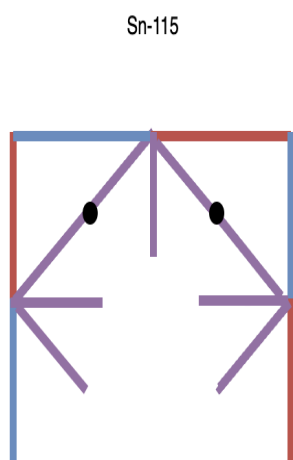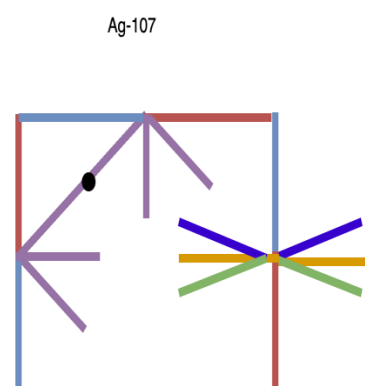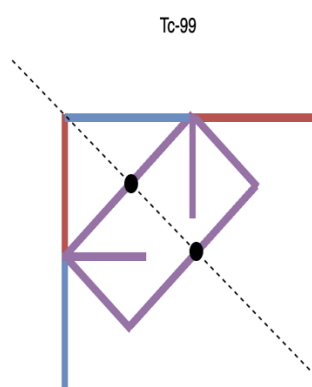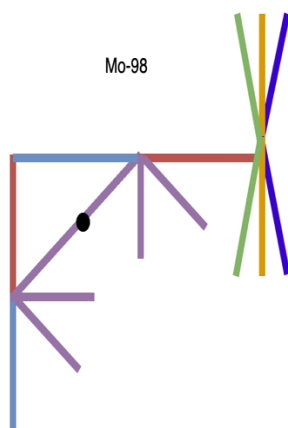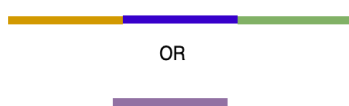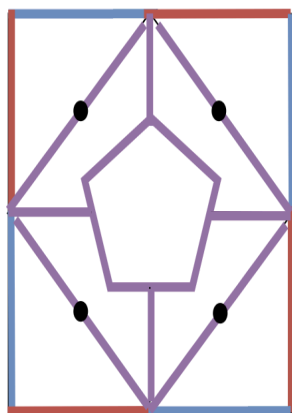
Nd-148
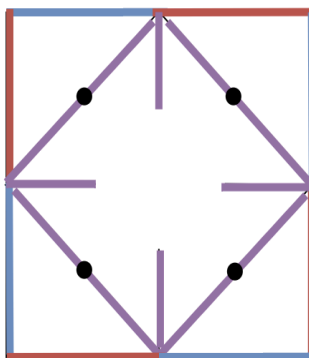
W-186

Au-197

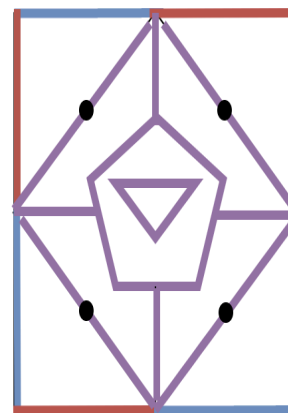Pb-206
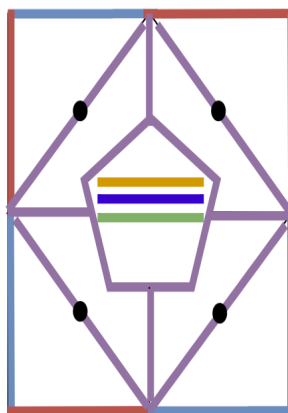
Rn-222

Appendix C: Polar Quaternion Space

Two Dimensional Quaternion Projection

Eight Points of Tangential Perpendicularity

$[\emptyset]$
2π
j

$[-1]$
k^2

i^2
π

$[-\infty]$ $\frac{\pi}{2}$ k

j^2 $-i$ $\frac{3\pi}{2}$ $\frac{\pi}{2}$ i $-j^2$ $-k$ $\frac{3\pi}{2}$ $[\infty]$

2π
$-i^2$
$-k^2$
$[1]$

$-j$

Four Infinite Quadrants

$q = \cos\theta i + \sin\theta j + \sec\theta k + \tan\theta (ijk)$
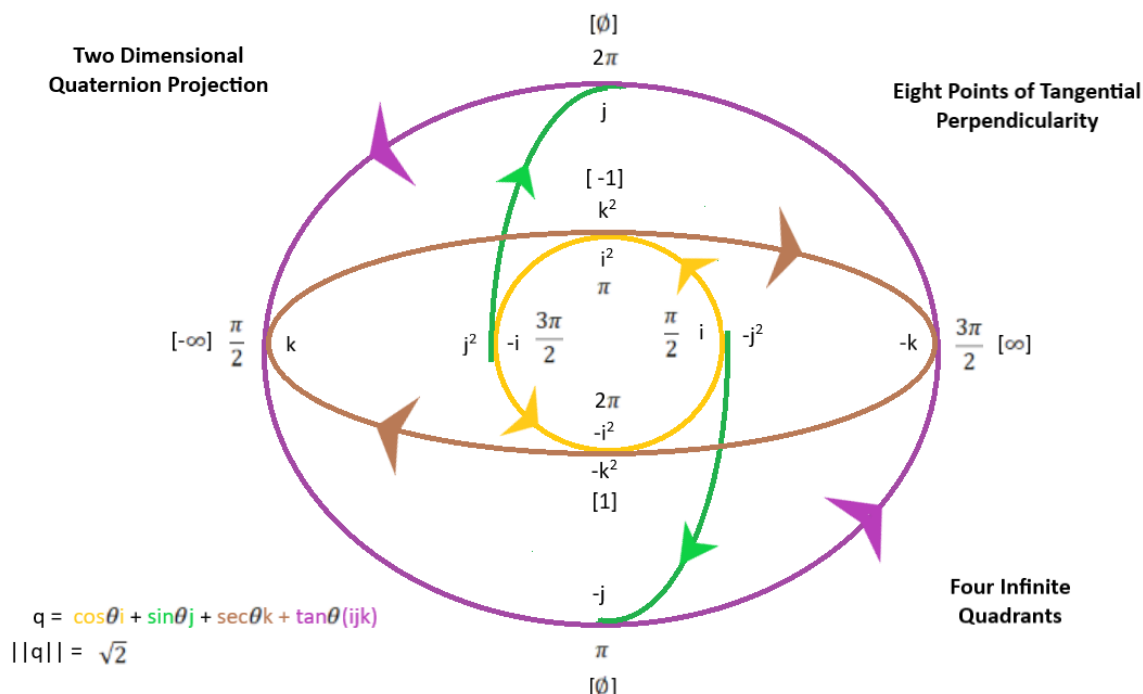
$\|q\| = \sqrt{2}$

π
$[\emptyset]$

Figure 1. Polar Quaternion Projection

The classical projection of quaternions includes the idea of linear perpendicularity and forces the j axis into an unnatural condition to create an origin. To view the above projection in cartesian constraints, one must picture the i-axis as a circle aligned with the xy-plane. The k-axis should be pictured as an ellipse aligned with the xz-plane, and the j-axis should be pictured as a double helix aligned with the yz-plane. The real axis circumscribing the rest of the model is a stereographic projection of a circle aligned with the xy-plane. In reality the real axis is perpendicular to the i, j, and k axes.

This projection does not have an origin, and as we know from cosmological observation, the universe also lacks a center. Perpendicularity remains a defining concept within quaternion space, but there is no way to describe a cartesian origin without inverting the rotation of an axis and misaligning the j-axis to the i and k axes at 1. While $-j^2$ does equal 1, it is not the point where the j-axis is perpendicular to the i-axis, and it is not directly perpendicular to the k-axis. The

perpendicularity of the j-axis and k-axis is commutative from the mutual perpendicularity to the real and i axes. Likewise, the perpendicularity of the real-axis to the i-axis is commutative from the mutual perpendicularity to the j and k axes. There is no cartesian origin for polar quaternion space and there is no center of the universe.

The projection can be inverted to show a classical relationship between the i-circle and the tangent and secant. This helps describe why the commonly undefined values of secant and tangent are defined by the direction of rotation as the limit as they are approached from a direction, also this projection switches the commutation of perpendicularity. From a counter-clockwise rotation of the i-circle, the tangent value approaches -∞ and the secant value approaches ∞ at π/2, then the tangent value approaches ∞ and the secant value approaches -∞ at 3π/2. A clockwise rotation will produce the opposite values for each, but in both instances the values are equal and they diverge depending on which directional limit you are concerned with.

By forcing the j-axis into a cartesian origin it has been offset by a 90 degree rotation. We compensate for this error with non-commutative multiplication, but it is not necessary when perpendicularity is commutative. If you start at 1 on the i-axis and rotate in the positive (counter-clockwise) direction 90 degrees to where the axis is perpendicular to the j-axis, then rotate in the positive direction on the j-axis (clockwise) to the point where it is perpendicular to the real-axis, you then have to assume a positive rotation on the real-axis (counter-clockwise) to the point where the real-axis is perpendicular to the k-axis. Similarly, if you start at 0 on the j-axis and rotate in the negative direction (counter-clockwise) to the point where it is perpendicular to the i-axis, then rotate in the positive direction on the i-axis you will find yourself on the k-axis. This pattern continues where a positive k, positive i, rotation creates a j value, but a negative i, positive k rotation requires a real-axis commutation to a j-value. Similarly a positive j, positive k, rotation requires a real-axis commutation to yield a i-axis value, but a negative k, positive j rotation does not require commutation through the real. A 90 degree positive i, positive j, positive k rotation will commutate through the real-axis and equal -1. A 90 degree negative i, negative j, negative k rotation will commutate through the real axis and equal 1. The polar quaternion model ascribes all the same rules presented by William Rowan Hamilton for quaternion multiplication.

For ease of description, I use the term point in the above paragraph, but the Euclidean idea of an intangible point does not exist. A quaternion must be described by four values. Each value describes a rotational alignment, and the resulting quaternion vector is not a line. It is an area. One dimensional and non-dimensional dynamics do not exist. The magnitude of the quaternion vector is the radius of a 4-d sphere and the real, i, j, and k values are the polar coordinates that describe the direction of the area. By relating these terms to trigonometric values, we can describe every possible quaternion area of a hypersphere with $\mathbb{R} = \tan\theta(ijk)$ $i = cos\theta$ $j = sin\theta$ and $k = sec\theta$. Accordingly, every vector area in quaternion space can be described by the equation $q = \frac{r}{\sqrt{2}}(tan\theta(ijk) + cos\theta(i) + sin\theta(j) + sec\theta(k))$ where the magnitude of q is r. We can expand this to obtaining the Capacity of a 4-d sphere from the rotation of the vector area. $\int_0^{2\pi} A_1 \int_0^{\pi} A_2 \, d\theta = C$ where the areas rotated are two perpendicular areas defined by the (i, j) component and the ($\mathbb{R}$, k) component. This area is obtained from the squared addition of the i and j or real and k components.

$$A_1 = \frac{r^2}{2}sin^2\theta + \frac{r^2}{2}cos^2\theta \quad A_2 = \frac{r^2}{2}sec^2\theta - \frac{r^2}{2}tan^2\theta \quad A_1 = A_2 = \frac{r^2}{2} .$$

$$\therefore \ Capacity_q = \frac{\pi^2}{2} \cdot r^4$$

The true first fundamental of geometry is a four-dimensional sphere. Just as it is accepted that a point is uniform and cannot have any other shape, there is no other shape in polar quaternion space. However, there are two types of spheres. One can be described as a positive hypersphere, the other can be described as a negative hypersphere. These two can three-dimensionally overlap without overlapping four dimensionally. This can be viewed rudimentally as the 1st and 2nd quadrants of the i circle versus the 3rd and 4th quadrants. When each (i, j) area is rotated by pi, as with the first area integration, each represents the whole volume without actually overlapping in the i and j values.

The positive hypersphere may be rotated without passing through any area of the negative hypersphere, and the negative hypersphere may be rotated without passing through any area of the positive hypersphere. This is graphically evident in the quaternion projections pictured above. In the first projection, take a starting value on the i-circle that is not already perpendicular to another axis as an example. At any perpendicular crossroad continue the rotation along the new

axis in the same direction (0-2π) or (2π − 0). In one complete rotation, you will find that you are back at the place where you began, but the i values in the 1st and 2nd quadrants will only pass through the 2nd and 3rd quadrants of the j and k and real axes. Similarly, any i value in the 3rd or 4th quadrant will only pass through the 1st and 4th quadrants of the j, k, and real axes.

This is akin to rotating a coin where heads or tails is facing you. First rotate around the vertical axis in one direction by 90 degrees, then rotate around the horizontal 180 degrees, then make a final 90 degree rotation around the vertical in the same direction as the first rotation. You will always end up with the same value, heads or tails, facing you as when you began.

From the first fundamental of geometry, we can then look at the derivate states rather than the integral states of Euclidean space. $\int_0^{2\pi} A_1 \int_0^{\pi} A_2 = C$ The volume of the pi rotation of the (i, j) or ($\mathbb{R}$, k) area is three-dimensional space. The area being rotated is two-dimensional space, and a *point* on the circle (which may only be described by θ) is a line. The non-dimensional concept of a Euclidean point does not exist.

To ascribe an origin and compare two four dimensional objects and the effect of Flow displacement, one must first define a reference sphere and then can describe any other sphere by its radius and an offset from the reference sphere which would be defined by distance and a θ value. Assuming that the reference sphere has an infinitely small radius will generate an origin at the center of quaternion projection, but that origin does not represent the location of perpendicularity for the four three-dimensional manifolds. A unit hypersphere is much more useful. Accordingly, two separate hyperspheres would be described as follows.

$$q_1 = r_1\{\theta : 0 \leq \theta_{q1} \leq \pi\} \: \{d_1, \theta_{d1}\}$$

$$q_2 = r_2\{\theta : \pi \leq \theta_{q2} \leq 2\pi\} \: \{d_2, \theta_{d2}\}$$

Where q_1 is a positive hypersphere and q_2 is a negative hypersphere

The vector space of polar quaternions is domain restricted by the trigonometric relationships described, but it is these restrictions that make it a proper vector space for each infinite universe.