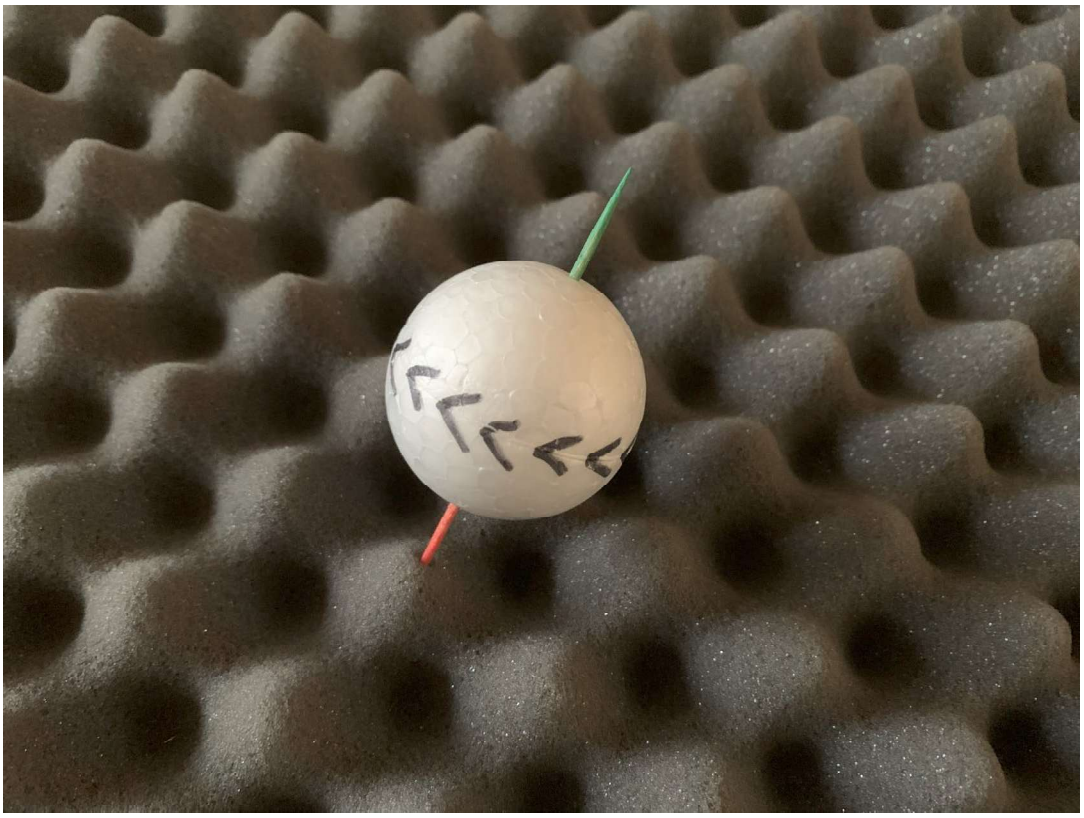
The One-Particle Theory of Everything



by Adam R. Gallina

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Abstract:

Four inter-dependent paradigm shifts are required in order to realize the Theory of Everything:

The Fundamental Particle as a Classical Sphere with Biaxial Declination
(replacing The Standard Model of Particle Physics);

The Flat and Infinite, Non-Expanding Universe
(replacing The Standard Model of Cosmology);

The Radioactive Decay-based Stellar Lifecycle
(replacing Stellar Nucleosynthesis); and

The Evolution of Biochemistries
(replacing Abiogenesis and Panspermia).

These paradigm shifts provide an internally-consistent framework that will allow us to propose radical new solutions for the arrow of time, quantum symmetry, the unification of the four fundamental forces, a reinterpretation of quantum physics and the collapse of the wave function, an explanation for dark matter, a reinterpretation of cosmic expansion and dark energy, the formation and evolution of stars and galaxies, the physics of black holes, the history of life on Earth, and the solution to the Fermi paradox, among others.

The Theory of Everything: An Abbreviated Summary

1.
The Universe is temporally and spatially infinite.
The Universe did not have a beginning, and will not have an end.
The Universe does not, and never has, expanded nor contracted.

There is only one type of fundamental particle in the entire Universe.
Fundamental particles are not created nor destroyed.

The fundamental particle is a classical particle that can spin on one or two axes, with an orientation relative to a frame of reference in three-dimensional, flat space.

Groups of fundamental particles will together determine the density of the particle field, in a perfectly empty, ideal vacuum.

The fundamental particles which comprise the field will each have their own biaxial orientations.

Fundamental particle axial interactions and equatorial interactions will cause the field of fundamental particles to have dynamic (changing) density and particle-orientation characteristics over time.

The first axis of spin, of the fundamental particle, exhibits a constant angular frequency, which accounts for the unidirectional nature of time. Fundamental particle spin is the basis of absolute time, but absolute time cannot be measured by "clocks", which are affected by the characteristics of the fundamental particle field.

The constant spin of the first axis results in a permanent dipole with two permanent, oppositely-charged poles (two point-like magnetic moments), with one at the clockwise pole and one at the counter-clockwise pole.

As such, a single fundamental particle contains two permanently-attached hemispheres connected at the particle's equatorial plane; and the dipole's equator has a constant angular frequency due to the axis of fundamental spin.

During the propagation of a single fundamental particle, the two poles (or, point-like magnetic moments), tumble over a second axis (the axis of propagation), and the fundamental particle is observed as a photon.

The geometry of the axis of fundamental spin relative to the axis of propagation is a biaxial declination. The dipole can tumble at a shallow declination angle or at a steep declination angle.

Given the constant speed of fundamental spin, the angle of declination will determine the tangential speed of the (cyclically-tumbling) magnetic moment about the axis of propagation. This is the hidden variable/function that drives the photon frequency of the classical fundamental particle.

It is the biaxial spin that generates the wave-like properties of the particle (in three-dimensional flat space).

When a pole, or magnetic moment, moves through time and space, its complex path may involve components of both linear propagation and cyclical tumbling.

The cyclical tumbling of each pole is the physical manifestation of quantum superposition, which follows a specific path…it is not random, and it is not everywhere all at once. When divided by the speed of light (removing the propagation component), the cyclical tumbling takes the form of a polar circle.

It is this biaxial declination that allows quantum entanglement to be reinterpreted as local, but not static. Bell only eliminated local hidden variables whose pairwise correlations are a function of linear forwardness with constant speed. However, reality is such that the cyclical tumbling component is not linear, but circular, which therefore results in accelerations and decelerations along the vector of forwardness. This is a function of the cyclical tumbling of the magnetic moments (along the polar circle) in three-dimensional space.

A new model which replaces quantum chromodynamics proposes that three fundamental particles can combine, with the geometry of an equilateral triangle, such that the composite-particle's two opposing sides will exhibit (symmetrical) handedness.

This model is used to explain the arrow of time; uncover quantum symmetry; provide classical reinterpretations of mass, charge, and spin; simplify the particle zoo of the Standard Model of particle physics; demystify quantum superposition; reinterpret the collapse of the wavefunction; explain electron-positron annihilation, quantum entanglement, and quantum uncertainty; correct nuclear decay equations; and enable a Grand Unified Theory of electromagnetism, the strong force, and the weak force.

2.
Spacetime is a function of the density of fundamental particles in flat space.

Gravitation emerges in part from the attraction between triangular composite particles and the fundamental particle density field.

We can roughly think of triangular-composite particles as matter, and the fundamental particle field of single dipole particles as the energy density.

Specifically, each end of the dipole (of the fundamental particle) is only attracted to an exclusive side of the triangular composite-particle.

This concept is the key building block to understanding that “individual fundamental particles are always attracted to triangular composite-particles”, while retaining internal consistency with both fundamental particle quantum symmetry and composite-particle quantum symmetry.

The solution to quantum gravity can be roughly translated as:

electron-hemispheres (of fundamental particles) are attracted to proton-sides (of composite-particles); and,

positron-hemispheres (of fundamental particles) are attracted to anti-proton-sides (of composite-particles).

Thus, fundamental particles are always attracted to nucleons; and

a higher mass of nucleons will attract a more-dense field of fundamental particles, for a given distance.

There is also a repulsive force in the universe driven by the repulsion of fundamental particles in a specific orientation (which we commonly observe, but erroneously call, “the repulsion of two electrons”), such that repelling fundamental particle density fields in a specific orientation can indirectly keep triangular composite-particle matter separated, (which becomes important in understanding the physics of the galactic center).

Thus, observed gravitation is the net of multiple forces that do not solely depend on Newtonian mass, as there is equal importance given to the fundamental particle field that surrounds the Newtonian mass.

There is an important paradigm shift required to reinterpret special relativity, given this new model of propagating biaxial fundamental particles (photons) propagating through a field of fundamental particles of varying densities (spacetime).

The speed of light is always constant relative to the fundamental particle density field (spacetime), as both photons and clocks slow in a more-dense fundamental particle density field. However, the speed of light is variable relative to flat space (though it can never be measured).

We must reinterpret cosmological redshift only after understanding multiple paradigm shifts, including: the fundamental biaxial declination geometry of the photon; the composition and dynamics of spacetime/the particle field; and the specifics of how a propagating biaxial fundamental particle interacts with a field of biaxial fundamental particles of varying densities.

When a photon's path bends towards a more-dense field of fundamental particles relative to flat space, there is a decrease in the biaxial declination, with the lost photon momentum transferred to adjacent fundamental particles in the fundamental particle density field (the biaxial declinations of the particles in the field are altered).

The lost momentum from an individual photon path bending event is so miniscule that it only becomes noticeable on scales of light years as the cumulative effects pile up.

Thus, we reinterpret cosmological redshift as the accumulation of photon bending, during propagation through asymmetrical fundamental particle density fields over great distances, in a non-expanding Universe.

This is a bending effect and not a scattering effect, and it is not a function of, but is only correlated with, propagation time.

The accelerated redshift of dark energy is then reinterpreted as the accelerated redshift of the classical photon, whereby the photon's biaxial declination approaches zero as the wavefunction collapses, and the fundamental particle transitions from spinning on two axes during propagation, to spinning on one axis and no longer propagating.

Over infinite time, a fundamental particle will be observed as a photon, or as a dipole-particle, depending on if it is spinning on two axes or one axis, respectively.

As such, the Universe is flat and infinite in both time and space.
There was no beginning and no cosmic expansion.
The Universe accounts for every location; i.e. there is no multiverse.

This section serves to realize the Theory of Everything, combining Grand Unified Theory with gravitation, with classical explanations for spacetime and the quantum field; special and general relativity; atomic structure, orbitals, and bonds; the photoelectric effect; doppler, gravitational, and cosmological redshifts and blueshifts; dark energy; and refuting cosmic expansion while explaining the cosmic microwave background radiation.

3.
In an infinite Universe, the formation of galaxies is driven by the attraction and repulsion of stars.

The galactic center is not a spherical mass of triangular composite particles (nucleons), but a very dense disk of fundamental particles, as the central galactic stars are both attracted to each other as well as intensely repelled from each other at close distances due to the repulsion of fundamental particle density fields (at a specific orientation).

A necessary paradigm shift to achieving a comprehensive theory of everything, across multiple domains of science, is that stars are not powered by the fusion of hydrogen into helium.
Rather, stars have an inner core comprised of uranium-238 which undergoes radioactive decay.

The core of the star has temperatures low enough to allow for chemical bonds to sustain, and for biological processes to take place.

Stars are not formed by the collapse of dense hydrogen clouds. Rather, proto-stars are fused into uranium-238 in the center of the galaxy, crushed together by the repulsion of the central stars' fundamental particle density fields, and then ejected in the galactic jets, forming the galactic quadrupole.

Proto-stars become the stars we commonly observe, when they begin to shine after a supernova, which is a star birthing process and not a star death process.
A supernova is the first time that the helium (a radioactive decay product of uranium-238) is broken apart by the extreme pressure of the surrounding field of single fundamental particles (which, not coincidentally, are also the radioactive decay products of uranium-238).

Stars evolve into planets and moons over trillions of years or more, in the temporally-infinite Universe.

We utilize the Theory of Everything to understand stellar and galactic formation and evolution; galactic rotation curves and dark matter; reinterpret black holes; refute stellar nucleosynthesis; reinterpret the Hertzsprung-Russell diagram; and extend the stellar lifecycle to planetary evolution.

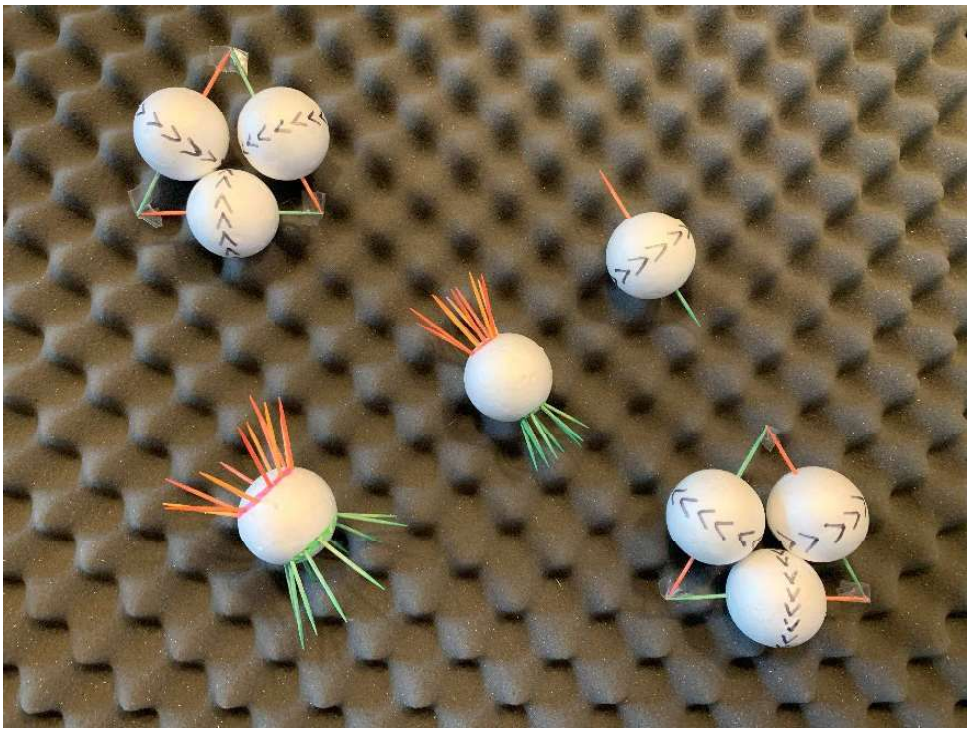
4.
The carbon-based biochemistry of life on the surface of the Earth evolved from a silicon-based biochemistry below the surface of the Earth, which evolved from an iron-sulfur-based biochemistry in the core of the Earth.

The iron-sulfur based life, that feeds on the products of uranium decay, lives inside the cores of all stars, planets, and moons, and is present from the time of the formation of the proto-star in the galactic center, and is infused with (that is, becomes an integral part of) the uranium-238 ejecta, released from the galactic jets.

Thus, the life is already inside the center of what will ultimately become the planet, even before the star evolves into a planet.

With the paradigm shifts of an infinite Universe and with a new model of stellar decay allowing for stars that evolve into planets, we can now see the human connection to all life on Earth (throughout the Earth's stellar lifecycle) and to all life in the Universe, and can finally propose the solution to the Fermi paradox, which is that life only reaches the external surface of the star for a brief period of time, at the very end of the stellar lifecycle, after the star evolves into a planet.

Thus, these interdependent paradigm shifts provide an internally-consistent framework to build-up from first principles, elegantly using only one type of fundamental particle at the quantum scale, following a logical roadmap to largest structures in the Universe, while reconciling prior anomalies and demystifying spooky phenomena.



The One-Particle Theory of Everything

aka

The Bi-Axial Declination of the Fundamental Particle;
The Singlet Density Field;
The Infinite, Non-Expanding Universe;
The Radioactive Decay of Stars;
The Galactic Double-Torus; and
The Evolution of Biochemistries

by Adam R. Gallina

Introduction

The Theory of Everything requires multiple concurrent paradigm shifts across quantum physics; astrophysics; cosmology; and astrobiology.

Comprehensiveness is required in order to address all experimental data, anomalies, and unsolved problems, while retaining internal-consistency. Due to the interdependence of scientific concepts, each paradigm shift cannot be overturned on a standalone basis. One could argue that the peer-review system of incremental scientific advancement is not well-equipped to handle such an ambitious and radical endeavor. Nevertheless, this is what is required.

We must reveal, reinterpret, and rectify the myriad incorrect assumptions that have historically been stacked on top of previous incorrect assumptions, and that are currently embedded within mainstream theory.

We do not chastise the solver of the Rubik's Cube for the state of disarray in which they find the Rubik's Cube at the outset. Occam's razor deals only with the elegance of the final solution, not with the number of steps that it takes to get there.

The Fundamental Particle

There is only one type of particle in the entire Universe; the "fundamental particle".
Everything that exists in the Universe can be described by either a single fundamental particle, or by a group of fundamental particles.

We are going to simplify the particle zoo that is the Standard Model of particle physics, with a deeper understanding of the classical dynamics of mass, charge, and spin, and a geometrical, three-dimensional, classical reinterpretation of the wavefunction, quantum superposition, and measurement.

I am modeling the fundamental particle as a sphere, although it could possibly be modeled as a disk, cylinder, ring, or torus.

What is important is that the fundamental particle spins on an axis, forming a dipole, with an orientation relative to a frame of reference, such that it retains top-down, left-right, and front-back symmetries.

Figure 1

First Postulates:
The fundamental particle cannot be created, nor destroyed; it is eternal.
The fundamental spin, of the fundamental particle, never begins and never ends.
The fundamental spin always spins at the exact same rate; it never speeds up, nor slows down*.
The fundamental spin of the fundamental particle, is the physical manifestation of Planck's constant.

**relative to flat space*

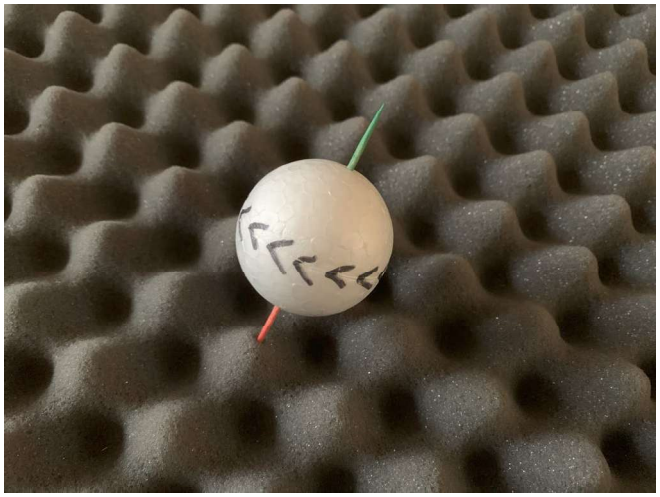


Figure 2

Because the fundamental spin is constant, the following classical particle structures of the fundamental particle are eternal and unchanging:

- the Planck Axis of Fundamental Spin (represented by the green/red polar axis in the diagram);
- clockwise pole (point where the green toothpick intersects the sphere);
- counter-clockwise pole (point where the red toothpick intersects the sphere);
- equatorial plane (black arrows pointing in the direction of Planck spin);
- center of the sphere (point internal to the sphere...not visible).

As the fundamental particle moves through time and space and changes its orientation, the two poles and the center of the sphere will chart three different paths through time and space, and the distances between these three points will not change.

Consider the different orientations that a particle might take, relative to a frame of reference.

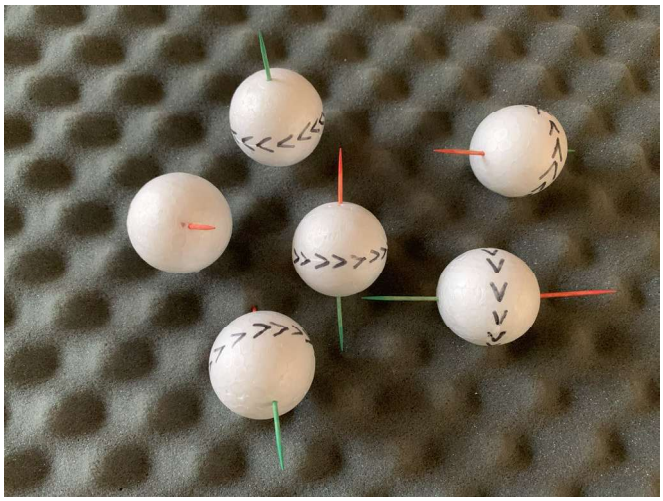


Figure 3

In my model, the clockwise pole (green) *is* the magnetic moment of the electron,
and the counter-clockwise pole (red) *is* the magnetic moment of the positron.

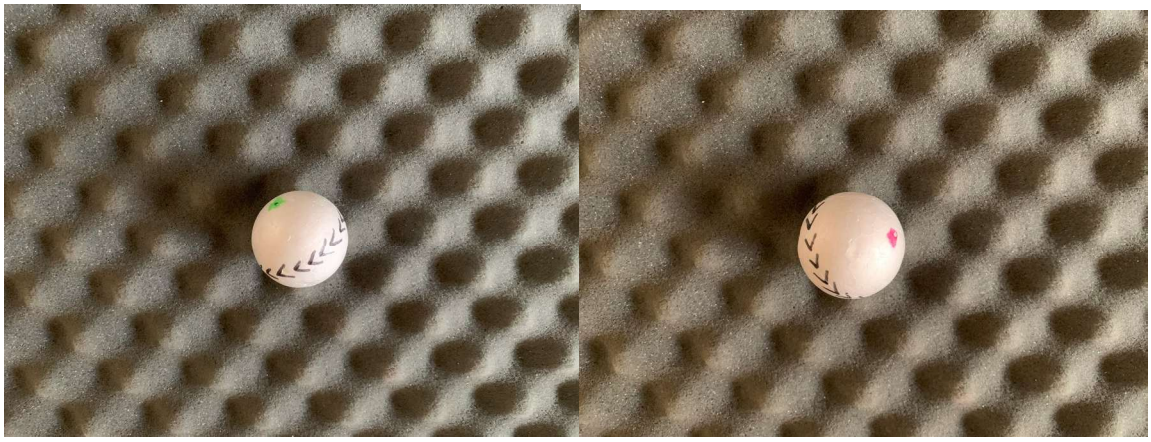


Figure 4

It is the Planck axis of fundamental spin that forms the dipole with two magnetic moments, and gives the fundamental particle its ability to interact with other fundamental particles of the Universe.

Quantum symmetry is at the core of the theory of everything.
The Universe holds an equal number of “electrons” and “positrons”, as they are the permanently-attached ends of the polar axis of a single fundamental particle, and the fundamental particle is the only thing that there is in the Universe.

However, an observer in some cases might mistakenly call the entire fundamental particle, an “electron”, and so we must be cognizant of whether we are quantifying the number of poles or the number of particles, as there are always twice as many poles as there are particles.

For example, if Alice is observing a clockwise pole, she would likely erroneously refer to the entire particle as an “electron”.
If Bob is observing a counter-clockwise pole, he would likely erroneously refer to the entire particle as an “electron”.

Additionally, if Alice is observing two particles, from a frame of reference that sees both a clockwise pole and a counter-clockwise pole, then Alice would likely label one of them a “spin-up electron” and the other a “spin-down electron”, and she would not care which label is which (but she should have!).

An “electron” is no more a particle, than the North Pole is the Earth; it is just a point on a sphere.

In my model, electromagnetic charge is not intrinsic to the particle, but is a function of the fundamental particle structure and the axial orientation relative to a frame of reference.

The Unidirectional Arrow of Time

Because the Planck spin of the fundamental particle is constant and can never reverse, time can only move forward in one direction.

Traveling back in time would require not only all particles in a system to retrace their trajectories, but also for the spin of every particle to reverse, which it never does.
Traveling back in time is impossible, because Planck's constant is constant.

Particles can at times move along a similar path from which they came, but their spins will always continue forward. As such, a particle can only achieve a new state in an old location, but never an old state in an old location.

The Singlet

I will refer to a single, fundamental particle as a "singlet". When the singlet is spinning on only one axis, I will refer to it as the electron-positron form of the singlet, or the dipole-form of the singlet.

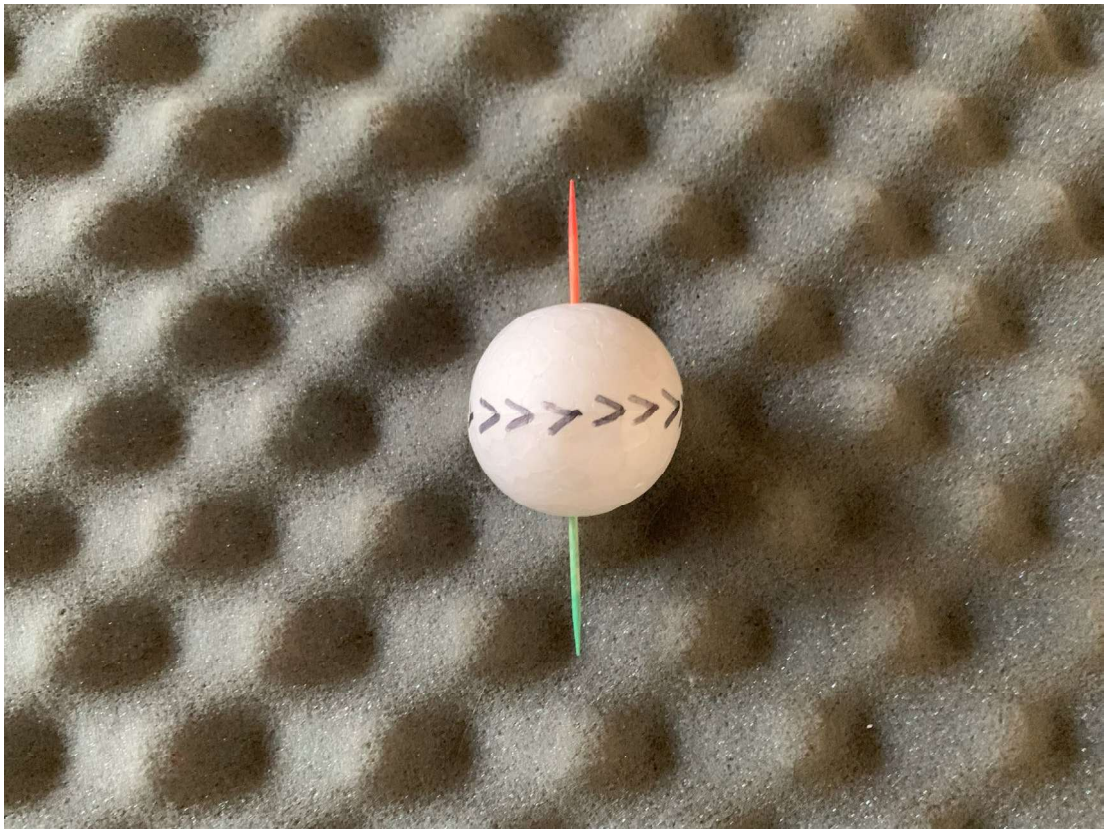


Figure 5

Now, let us address the rules of fundamental particle interaction (electromagnetism), while cognizant of a particle's orientation relative to a frame of reference.

Please notice the green and red poles, and the direction of the equatorial arrows.

The Polar Interaction Between Two Singlets:

Two of the same pole facing each other will *repel*...
(clockwise vs clockwise) or, (counter-clockwise vs counter-clockwise);
(green vs green) or (red vs red),…and the equators are anti-parallel.

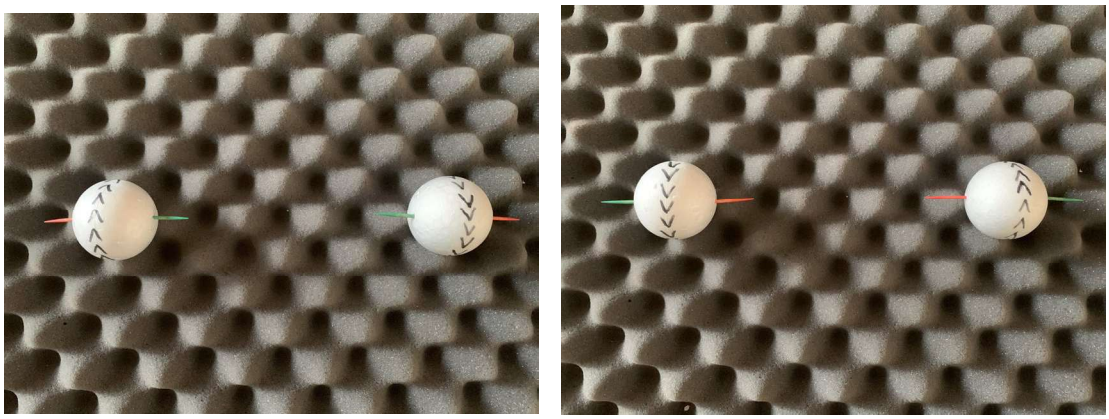


Figure 6

Two opposite poles are *attracted* to each other...
(clockwise vs counter-clockwise) or, (counter-clockwise vs clockwise);
(green vs red) or (red vs green).

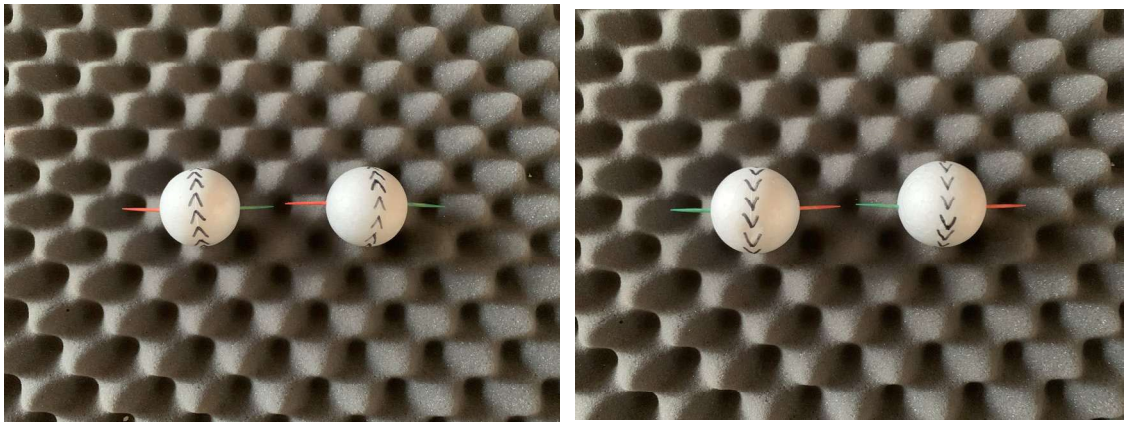


Figure 7

Notice that the equatorial arrows are parallel in this case.

The Equatorial Interaction Between Two Singlets:

Two equators spinning inward towards each other (right vs left) are *attracted* to each other,
as are two equators spinning outward from each other (left vs right),
which is the exact same scenario viewed from the opposite-side frame of reference.

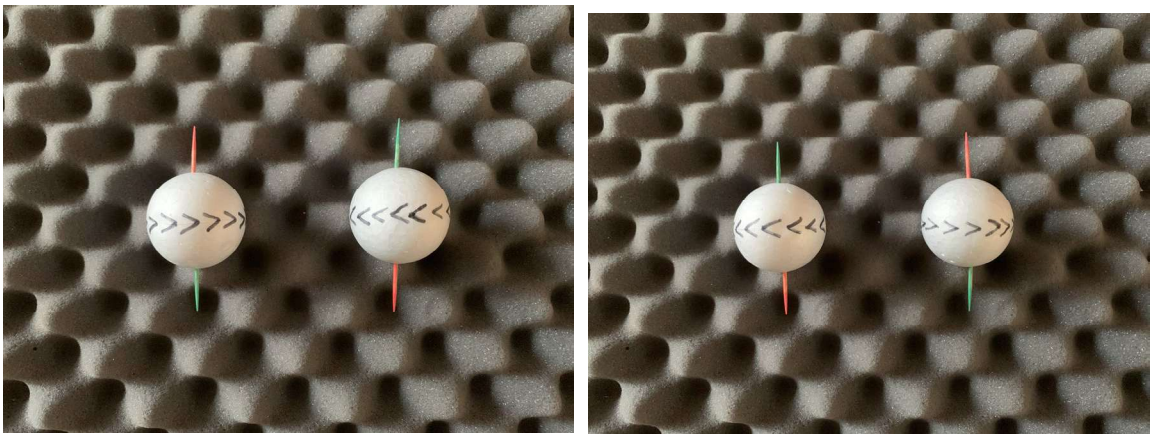


Figure 8

Two equators spinning in the same direction (left vs left) or, (right vs right)...will *repel*.
These are opposite frames of reference.

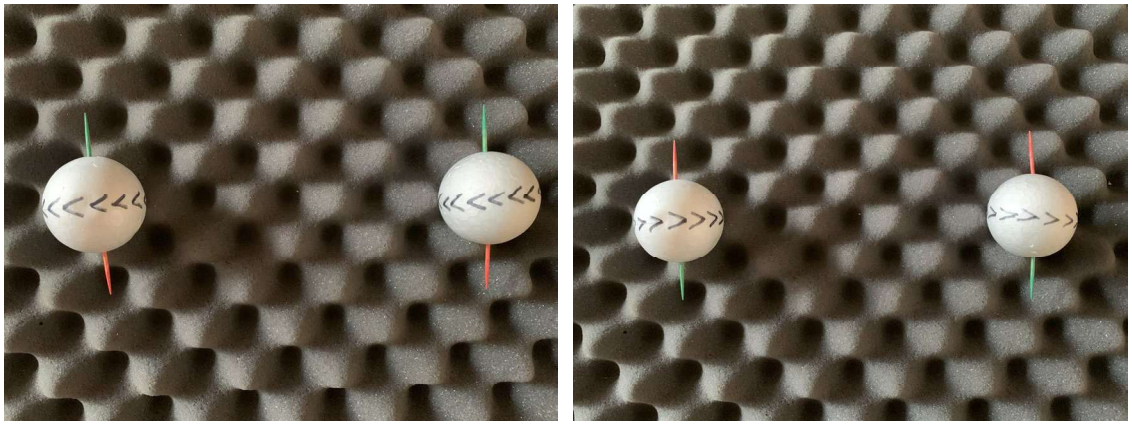


Figure 9

In the picture above, two green poles are on the top, and then two red poles are on top.

From another frame of reference, this same scenario might be observed as two clockwise poles viewed head-on (two green poles), or as two counter-clockwise poles viewed head-on (two red poles). They will still repel despite the different frame of reference.

The Attraction and Repulsion of Wires Carrying Electric Current:

We can now understand why two wires, with electric currents going in the same direction, are *repelled* from each other,...because the adjacent singlet equators from each wire are pointing in the same direction (left vs left) or, (right vs right).

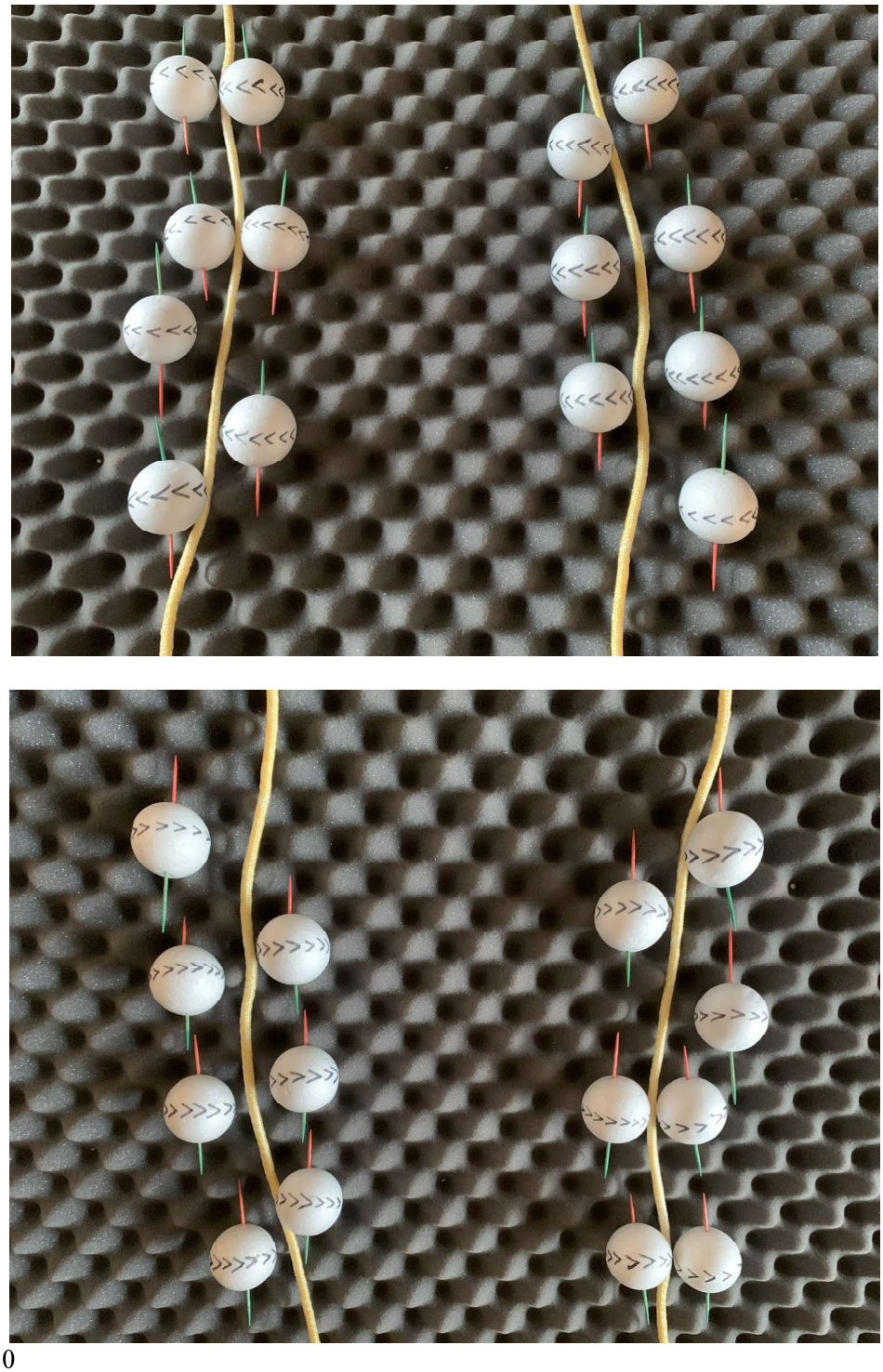


Figure 10

Two wires with electric currents going in opposite directions will *attract*,...because both of the adjacent singlet equators are spinning inwards or outwards, depending on the observer's frame of reference.

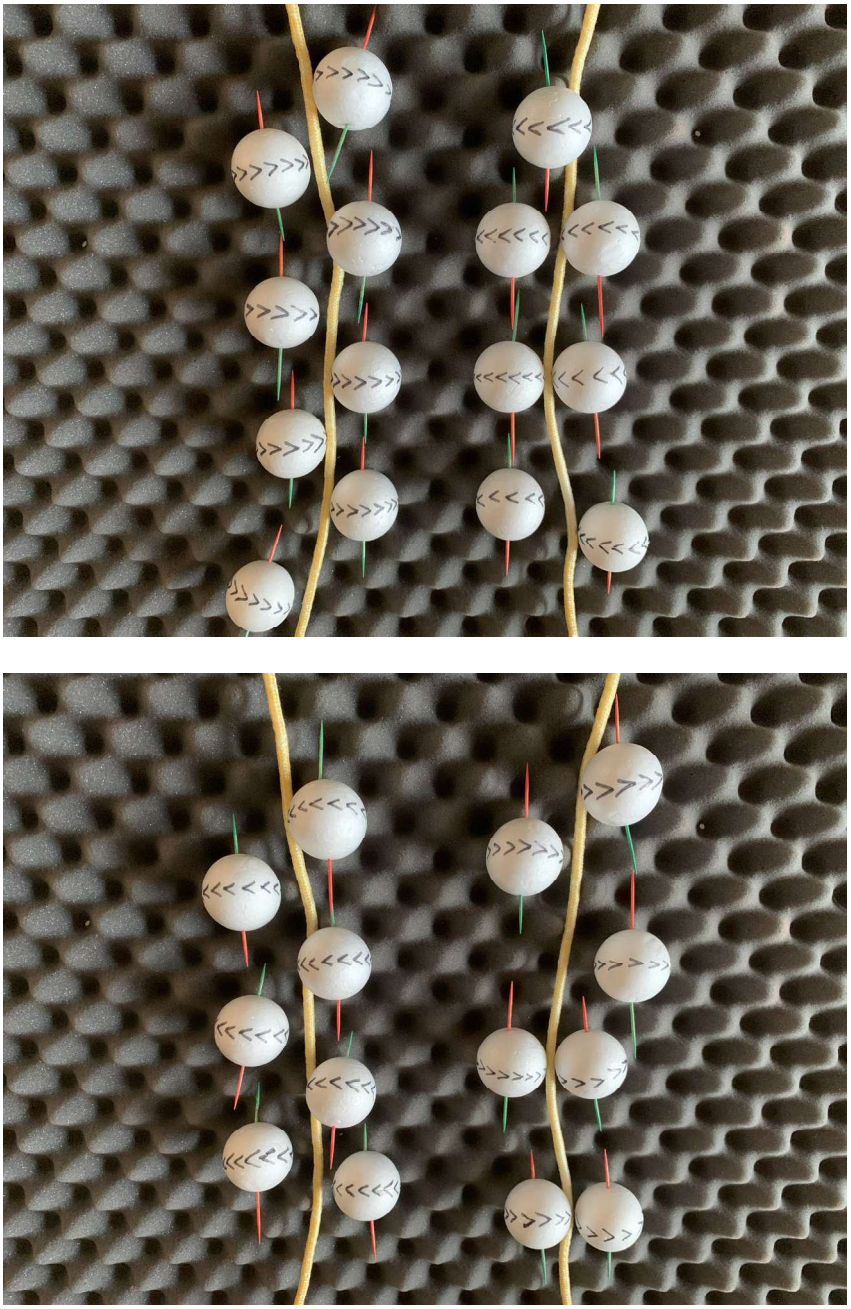


Figure 11

The Electromagnetic Field:

We can see how multiple singlets could line up together, pole to pole, to create what is observed as "electric field lines" (along the fundamental, polar axis), and how these lines of particles would be repelled from other lines of particles, at the equators.

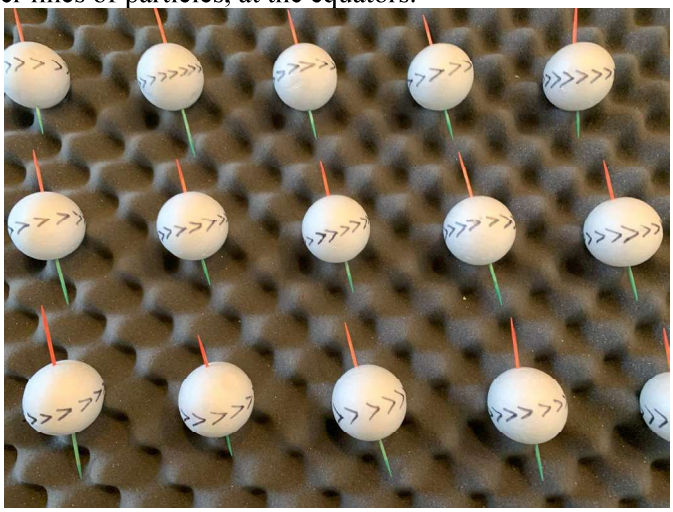


Figure 12

We can see how the electromagnetic field could be comprised of fundamental particles, with importance given to both the quantity/density of fundamental particles and the homogeneity of their axial orientations. Compare the homogenous and heterogeneous axial orientations below.

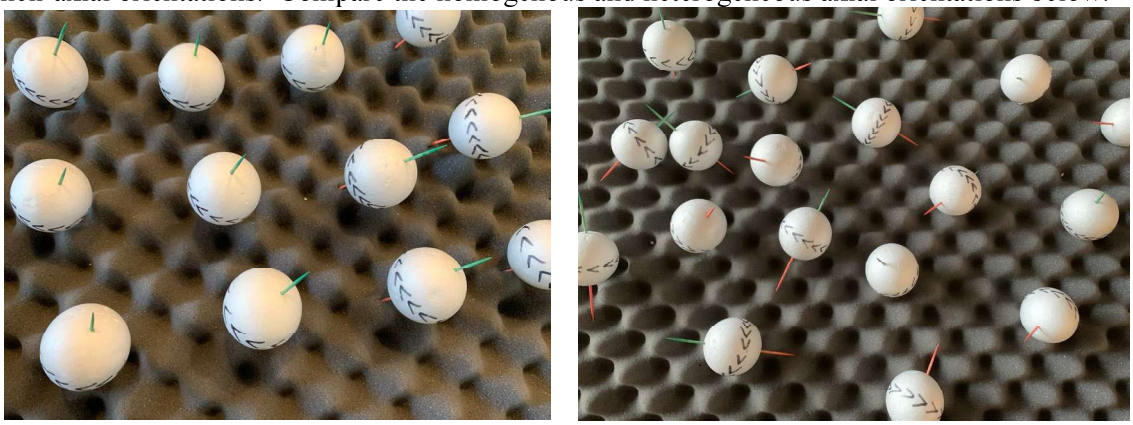


Figure 13

To state it explicitly:
the electric field is the field of singlet particles with respect to the homogeneity of the polar axial orientations; and
the magnetic field is the field of singlet particles with respect to the homogeneity of the equatorial orientations.

Orthogonality in electromagnetism (the electric field versus the magnetic field) is due to the equatorial plane of the fundamental particle relative to the Planck-axis of fundamental spin.

We will come to learn that all quantum and gravitational fields are just manifestations of the field of fundamental particles, with respect to the specific polar orientations, biaxial declinations, particle densities, as well as composite particles, and composite particle orientations, densities, rotations, and declinations.

The Photon-Singlet

Light is a particle, and not a wave.
The wave-like characteristics of a photon can be explained using a classical model.

Each photon is a singlet, that spins on two axes.
In addition to the permanent and constant Planck-Axis of Fundamental Spin, a propagating photon gains a second axis, which I am calling, the "Axis of Propagation".

During propagation, the Planck poles tumble end-over-end, over the Axis of Propagation (the yellow toothpick, horizontal axis below).
Also notice how the equator appears to wobble over time.

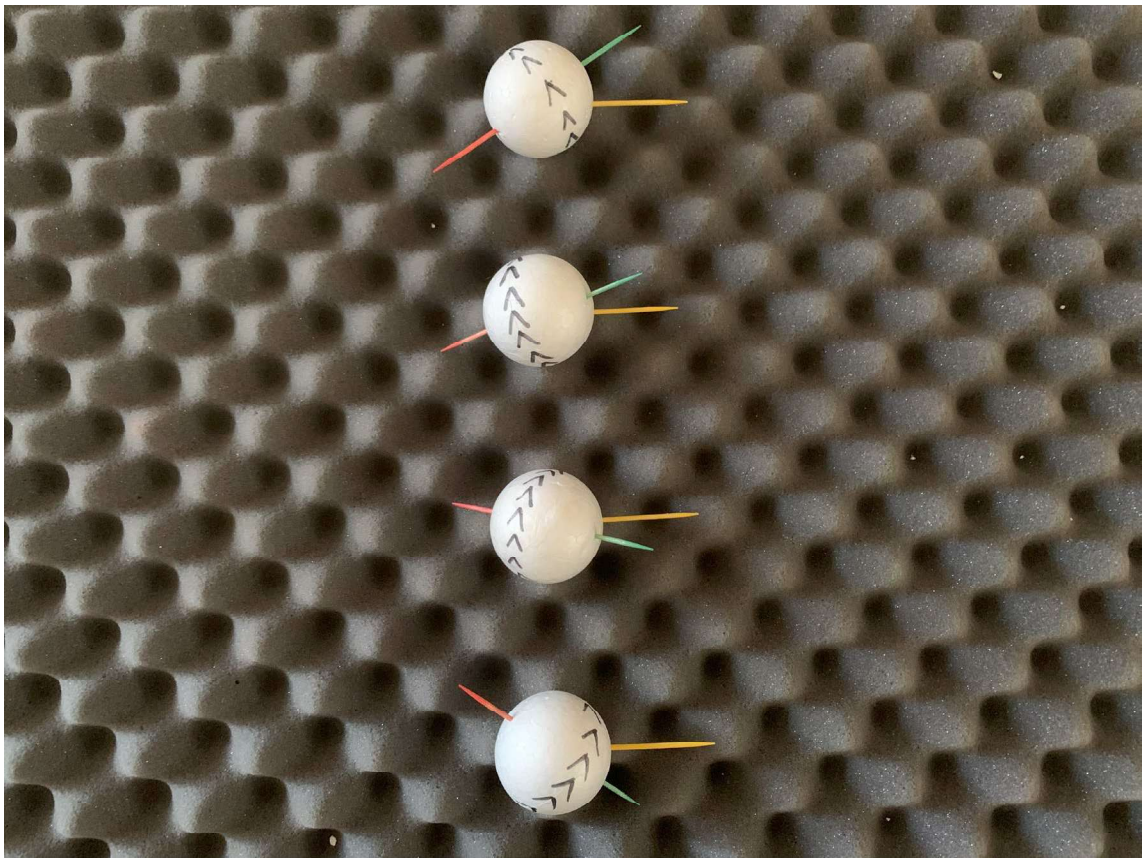


Figure 14

For the diagram below, pretend that you are observing a photon coming at you head-on, but you can hypothetically only see the magnetic moments and not the entire sphere.

Due to the 180-degree offset, what you would see is a point on the left-hand side moving down vertically, and then it magically teleports to the other (right-hand) side and moves down vertically, before somehow teleporting back to the left-hand side, and moves down again.

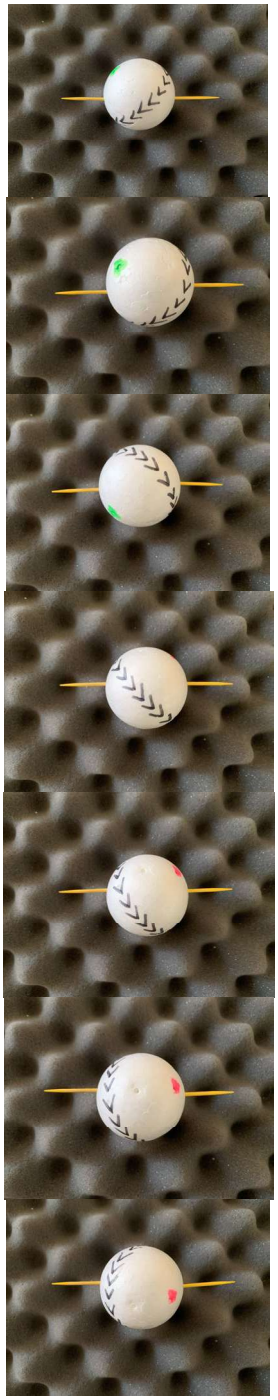


Figure 15

This next diagram shows two different notation-formats which describe the exact same biaxial rotations…

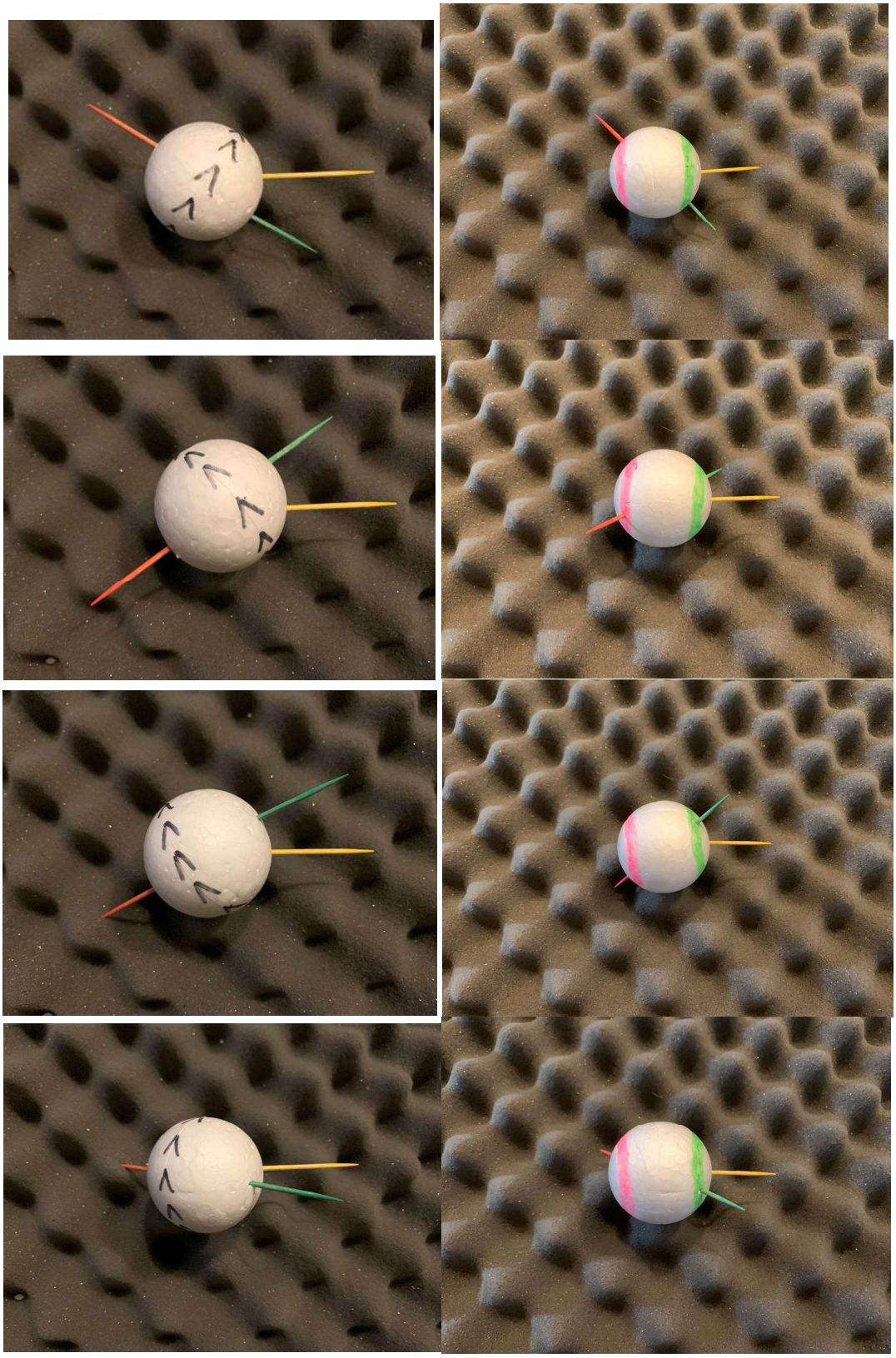


Figure 16

The Polar Circle

For the propagating photon-singlet, if we were to follow only one of the Planck-poles through time as it tumbles (essentially, dividing out the linear propagation component represented by the speed of light), it would trace what I am calling a "polar circle".

Importantly, each photon has two polar circles; the paths of the two magnetic moments over time. The orientation of the two polar circles relative to a frame of reference determines the polarity of light.

A blue light photon (gamma ray) has two polar circles with a very large circumference, there is a shorter distance between the polar circles, and the polar circles are both towards the middle of the sphere.

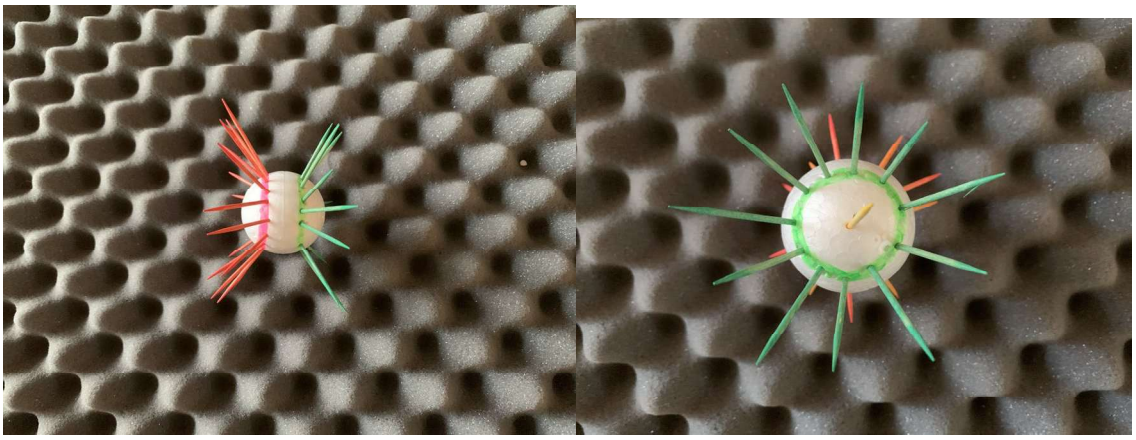


Figure 17

A red light photon (radio wave) has two polar circles with a very small circumference, there is a longer distance between the polar circles, and the polar circles are at the opposite edges of the sphere.

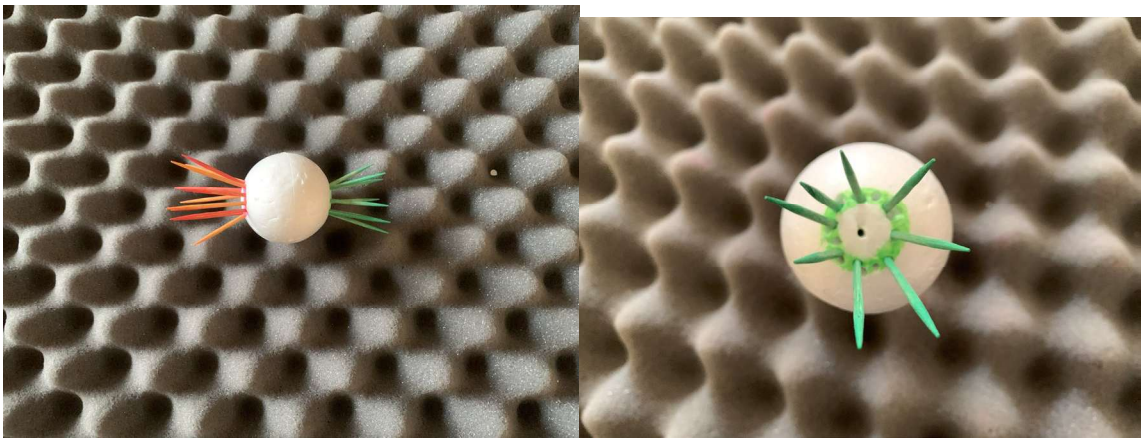


Figure 18

Notice the inverse relationship between the diameter of one the polar circles,
and the distance between the two polar circles.

Figure 19

Compare the biaxial declinations for long vs medium vs short wavelength photons, respectively:

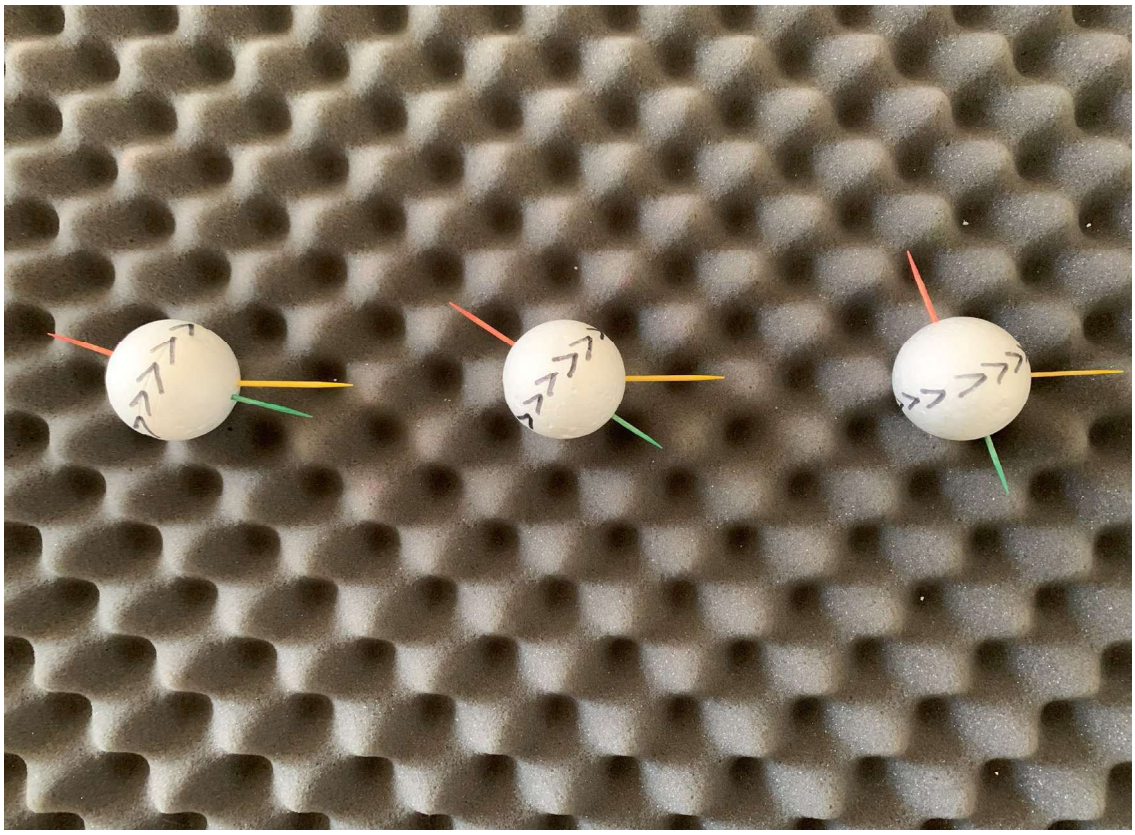


Figure 20

Long waves are closer to the dipole-form of the singlet, while short waves have a steeper declination.

The Heisenberg Uncertainty Principle

Let's compare two different frames of reference during photon orientation.

First, envision a frame of reference of looking head-on to the axis of propagation.
With the yellow toothpick observed head-on, we would see one of the polar axes (green or red depending on which side) rotating along the polar circle.

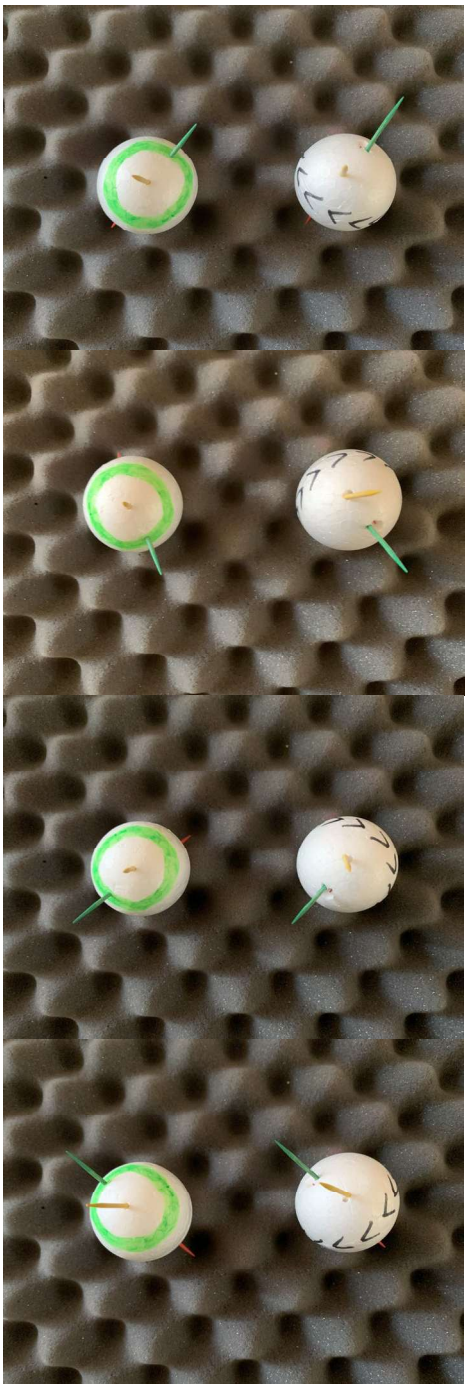


Figure 21

Now, although this part is an unconventional thought experiment, let us consider observing one of the two magnetic moments during proton propagation. That is, observing either the green toothpick or the red toothpick head-on during photon propagation.

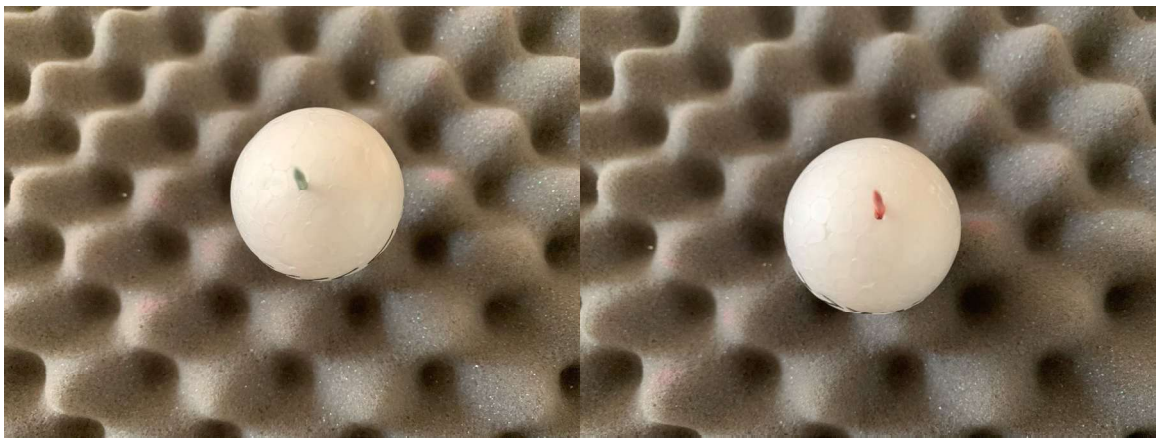


Figure 22

What we would observe is the particle orientation appearing to be still and unmoving, however the background world would be spinning around in a circle, like a car driver's phone selfie-video during a tumbling car crash.

Notice that the background would appear to spin wildly for a gamma photon and would not appear to spin very much for a radio wave photon.

Finally, consider changing the observers frame of reference over time, transitioning between looking head-on to the Planck axis of fundamental spin, and then head-on to the axis of propagation, and then back to the Planck polar axis again.

This tradeoff of increasing Planck Axis/decreasing Propagation Axis and then decreasing Planck Axis/increasing Propagation Axis is the (classical) physical manifestation of the Heisenberg Uncertainty Principle, with position represented by the Polar frame of reference and momentum represented by the Propagation frame of reference.

Specifically, when the polar axis is head-on, you have no idea how big the polar circle is.

However, if you have the yellow toothpick (Propagation Axis) head on, then you know how big the polar circle is, because you know the biaxial declination,
but you have no idea where the green/red toothpick will be found along the polar circle (which would require the observer to align with the polar axis in order to make a measurement).

Redshift

When the classical photon redshifts from blue to red (gamma ray to radio wave), the declination between the two spin axes is decreasing, the distance between the polar circles is increasing, and the polar circles are getting smaller.

[Redshift is going from left to right in the diagram below]

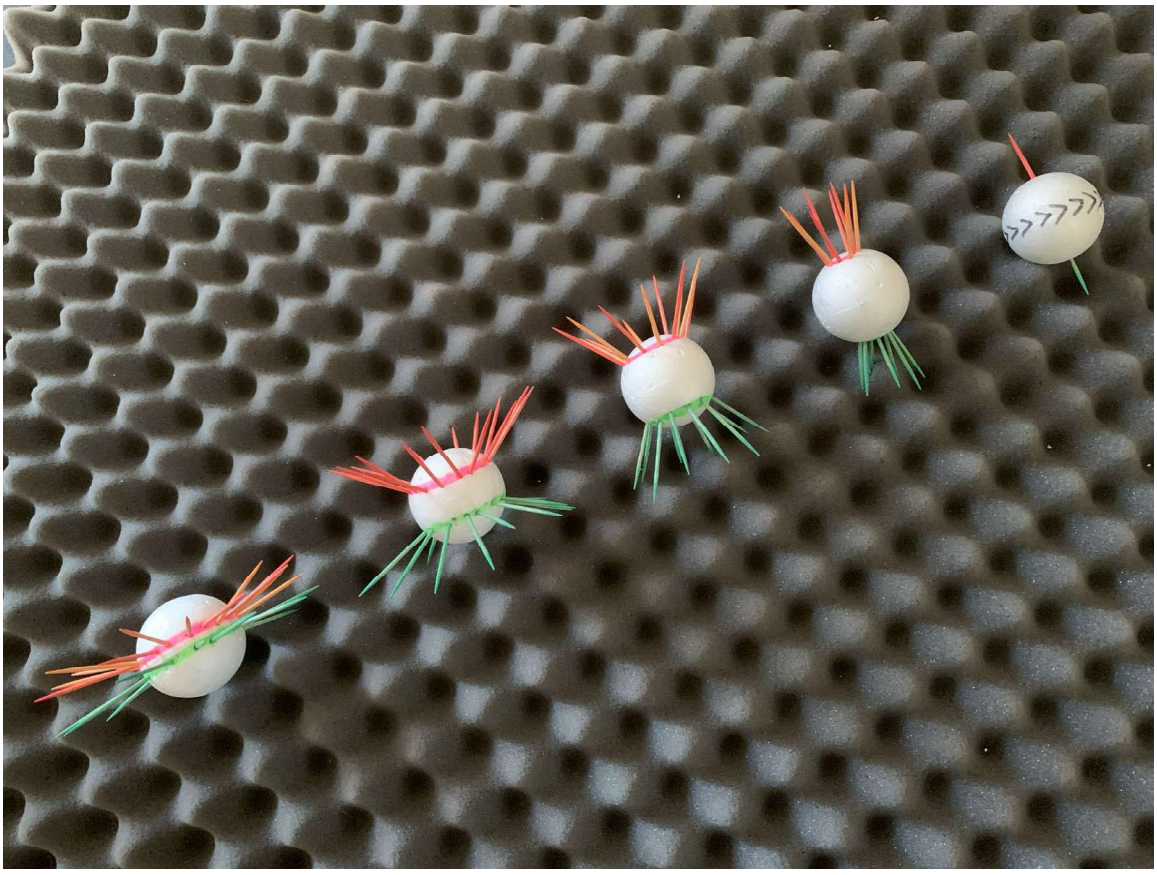


Figure 23

At zero declination, each magnetic moment continues to turn with the Planck spin (which is permanent and constant), but it is no longer tumbling in a polar circle with a radius,...instead becoming point-like.

At zero declination, photon propagation will cease.

The Electromagnetic Spectrum

Consider the photon-singlet, head-on to its two polar circles viewed vertically, and divide the view into four photon-quadrants (yellow x-axis, and orange y-axis).

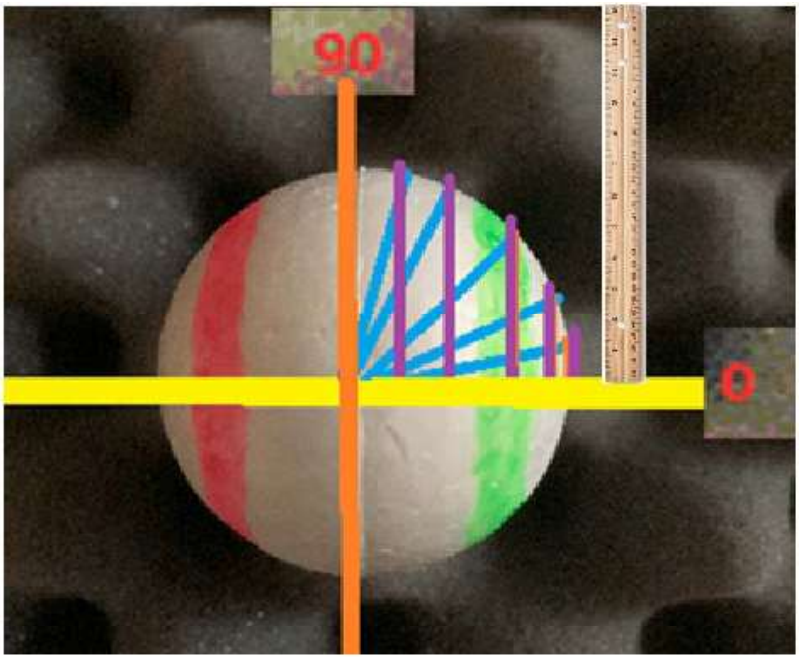


Figure 24

A declination within each photon-quadrant can range from 90-degrees to 0-degrees; which is the classical analog of the electromagnetic spectrum of light: gamma rays (90-degrees) to radio waves (0-degrees).

All of the biaxial declination information can be extracted from any of the four individual quadrants. Any one quadrant has a symmetry with each of the other three quadrants.
From the head-on view, you can observe both polar circles oriented vertically.

From this frame of reference, notice that:
the radius of a polar circle (purple) is measured vertically from the horizontal yellow line to the edge of the sphere; while
the radius of the fundamental particle (blue) is measured from the center of the sphere to the edge of the sphere.

To be sure, the dynamic circumference of the polar circles are different from the static circumference of the fundamental particle; i.e. less than or equal to.

At maximum momentum, the radius of the polar circle approaches the radius of the fundamental particle. This suggests that there is a maximum energy for a single photon (a 90-degree declination).

During proton propagation, the photon-singlet's magnetic moments are tumbling end over end; i.e. not steady, and the Planck poles lose their ability to exhibit significant charge and mass when interacting with other fundamental particles in the field of fundamental particles.

In a sense, the Planck poles lose their structural integrity when they are not point-like. The paradox is that when Planck poles lose structural integrity, they exhibit more momentum energy.

Photon Energy

The physical quantity energy, is a function of the movement of the fundamental particle's two magnetic moments through time and space, as the magnetic moments both tumble and propagate, as governed by the declination of the complex biaxial spin.

The more magnetic moment tumbling,...the more energy.

Specifically, the equation:
energy = Planck's constant x frequency

will need to be reinterpreted as:

energy of the magnetic moment = (fundamental Planck spin…the rotation of the dipole) x (tangential speed of one of the tumbling magnetic moments along the polar circle / distance of linear propagation of the axis of propagation)

Notice that the tangential speed of the tumbling magnetic moment along the polar circle (in meters per second), is divided by the distance of linear-propagation (in meters), which results in:

(meters per second / meters), which approximately simplifies into the units of frequency; (1 / seconds), interpreted as (cycles per second).

However, notice that we are only approximately simplifying, because we are erroneously mixing different units…different types of meters; that of linear-propagation, and that of cyclical tumbling,…

the latter of which harmonically oscillates between contributing to, and detracting from, the vector of linear propagation.

Likewise, the unit of measurement that we call "wavelength", as measured in meters, is a misnomer as well, since it hides the true formula for wavelength as (speed of light / frequency), which is:

(velocity of linear propagation of the axis of propagation in meters per second) / [(the tangential speed of the tumbling magnetic moment along the polar circle in meters per second, divided by the distance of linear-propagation in meters)

As such, the units for wavelength should instead be thought of, as:
(meters-squared x seconds) / (meters x second)
which, again, only approximately simplifies to just "meters".

Let us compare my model with current theory, because it has ramifications for the reduced Planck's constant and angular frequency.

Although they may not realize it, current theory incorrectly implies that if you want a photon with a higher frequency, then you need to spin the axis of propagation faster.

However, in physical reality, the axis of propagation spins at the same rate (angular frequency) for all photons (*relative to flat space*),
and the higher frequency comes not from a faster rate of spin, but from a longer path that the magnetic moment must traverse for the same amount of angular spin change.

Covering a greater path in the same amount of angular spin results in a higher tangential speed of the magnetic moment about the polar circle.

Instead of saying that all photons travel at the speed of light, we should be more precise, and clarify that the *centers* of all photons travel at the speed of light, and that the axis of propagation (of all photons) moves linearly along the vector of photon propagation at the speed of light.

To be sure, the axis of propagation for all photons, spins at the same angular frequency.
However, each photon has its own tangential speed of the tumbling magnetic moments about the polar circle, which is a function of the size of the polar circle.

Compare the small polar circle of the clockwise pole of the radio wave, versus the large polar circle of the clockwise pole of the gamma ray photon.

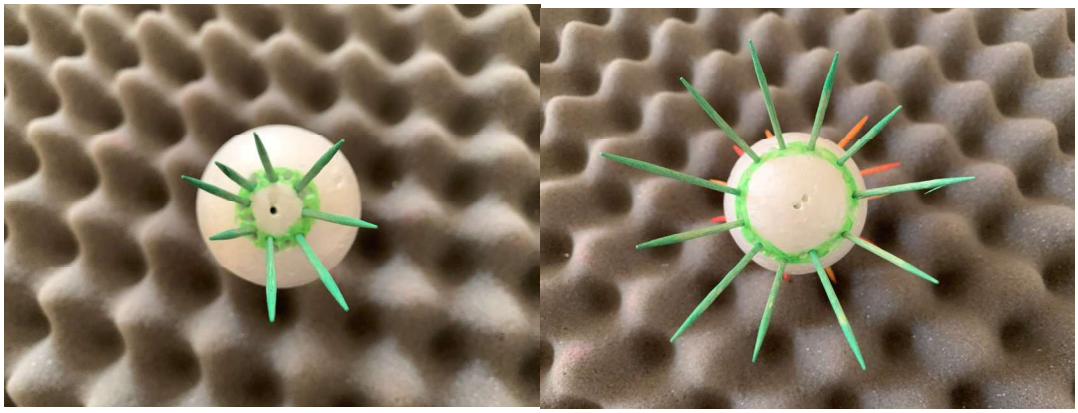


Figure 25

With a large polar circle, the tumbling magnetic moment has to cover a greater distance per cycle of angular frequency, whereas for a small polar circle, the tumbling photon has less distance to cover during a cycle of tumbling. And with zero declination...no distance at all.

Thus, it is the declination between the two spin axes, that generates the tangential speed of tumbling magnetic moments; aka the frequency of the photon; aka the momentum of the photon.

Below, we compare three different propagating photons, from the frame of reference of the axis of propagation (on the side of the clockwise pole). Top diagram is radio wave, bottom is a gamma ray. Notice the greater declination for the gamma ray; the green is farthest apart from the yellow.

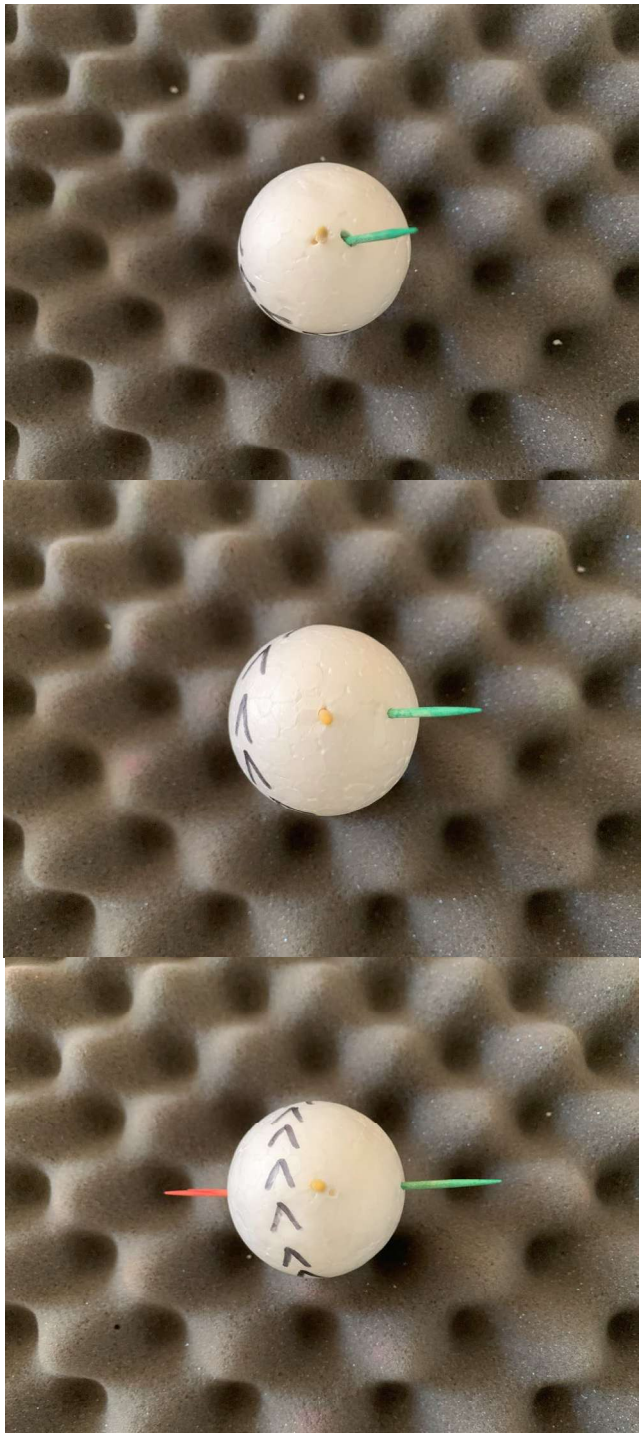


Figure 26

It is the complex spin of the cyclical tumbling during a linear propagation, that correctly explains how higher dimensions of space can be hidden inside three dimensions of space.

This curled-up dimension is in fact a circle (not a pendulum, and not a line), with the circle's edge (or plane) aligned with the direction of photon propagation.

The center of the photon (sphere) always propagates at the speed of light, while each of the magnetic moments cycle through propagating faster than the speed of light and then slower than the speed of light along the direction of propagation, in terms of forwardness/backwardness.

The cyclical tumbling caused by the biaxial declination, is the imaginary component of complex spin in quantum physics, harmonically oscillating between forwards and backwards, with a net contribution to the forward propagation component vector of zero over any significant time interval.

A Neoclassical Interpretation of Quantum Physics

It was incorrect to say that a photon experiences no time.
Time is a function of fundamental Planck spin, which is constant relative to flat space.

The photon tumbling over the axis of propagation offers 360 continuous degrees of possibilities, for a given declination. Each declination angle offers an entirely different 360 continuous degrees of possibilities. There is a full menu of different outcomes that could happen, each depending on any specific declination angle at a given time.

The polar circle is the physical manifestation of quantum superposition, containing all 360 degrees of possibilities.

The collapse of the wavefunction, is *where* each of the photon's poles (or magnetic moments) are, on their respective polar circle, at a specific point in time, given the Planck Axis orientation relative to a frame of reference.

Consider an observer seeing a clockwise pole (closest to them), versus an observer seeing a counter-clockwise pole, at wavefunction collapse...

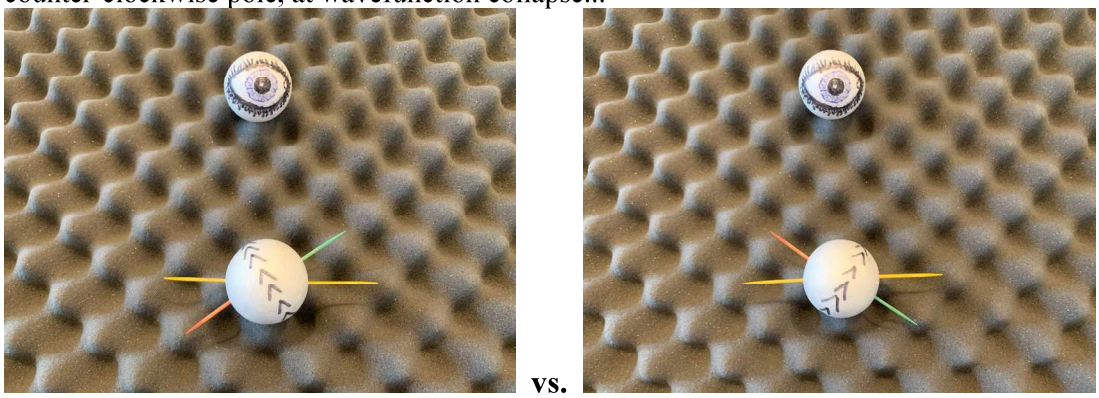


Figure 27

Schrodinger's cat was not simultaneously both dead and alive; the cat was playing Russian Roulette. Pulling the trigger is the collapse of the wavefunction, as the bullet takes a specific orientation within gun's cylinder. The gun's wheel contains all the possibilities of where the bullet might be, but there was only ever one bullet that gets spun around the wheel. Likewise, there is only one magnetic moment that gets spun around each polar circle.

Figure 28 (source: https://roadsafetyguy.com/stop-playing-russian-roulette-on-the-road/)

We can now re-interpret quantum physics as neither Copenhagen, nor Many-Worlds, nor Bohmian,... but as Neoclassical, with two axes (Planck and Propagation) containing the hidden variable/function of complex spin in three-dimensional, flat space.

Quantum measurement is the process of aligning the particle with an electromagnetic field, with the observer aligned with either the clockwise or the counter-clockwise pole of the singlet, thereby preventing the magnetic moments from further tumbling along the polar circles.

Because the polar axial orientation is no longer dynamic, the wavefunction appears collapsed.

Wave-like Behavior of the Classical Particle

In the double-slit experiment, there is only a single classical particle, and the particle can only travel through one of the slits.

The particle trajectories are a function of the orientation of the polar axis at the time it passes through one of the slits.

This is why the pattern can be built up from individual particle propagations.

Notice the relative orientations of the green and red poles in the diagrams below…

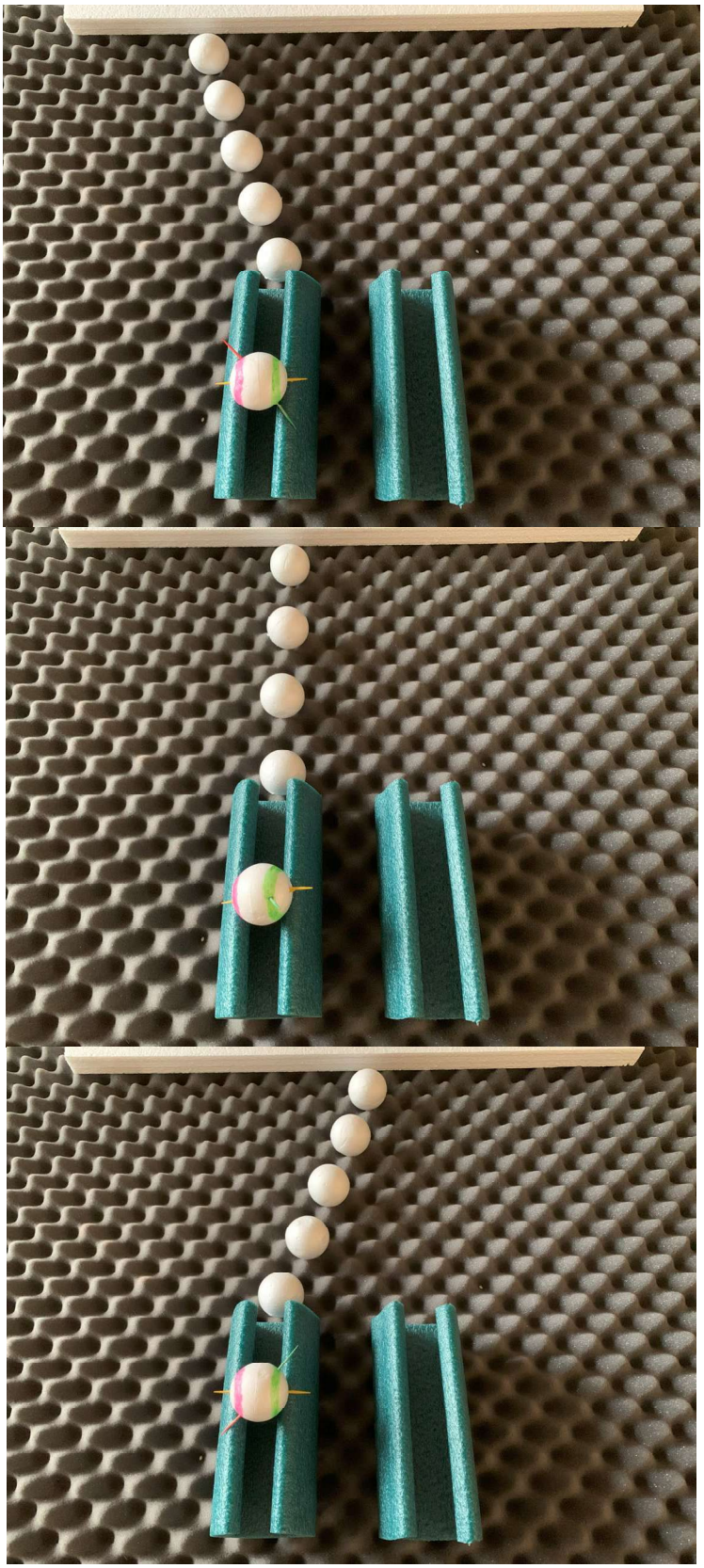


Figure 29

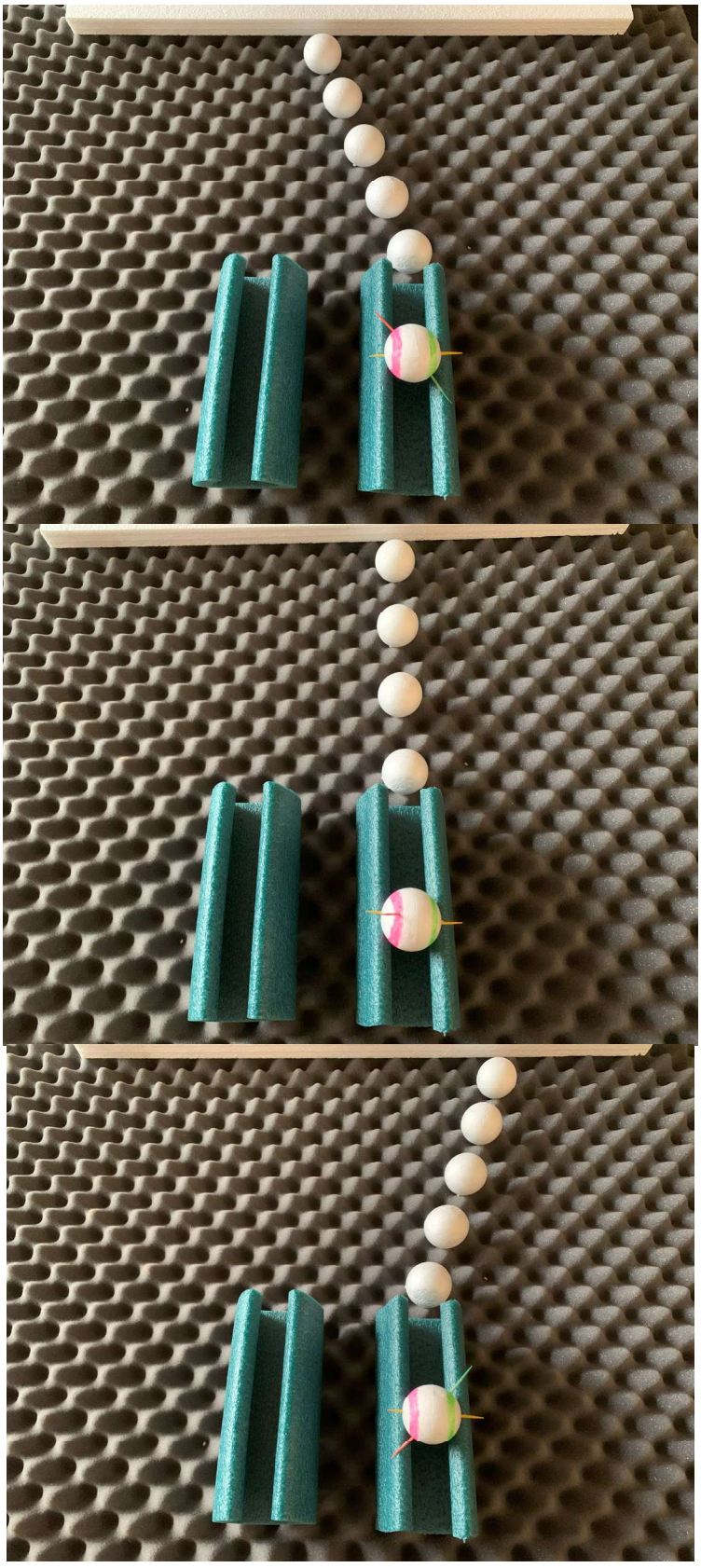


Figure 30

The difference between the one-slit case and the two-slit case, is that the two polar circles of the photon-singlet introduce an asymmetry that can be set against a difference between the inner-slit-wall-edge, and the outer-slit-wall-edge, which are only perfectly symmetrical in the one-slit case.

For all other cases, there will be a difference in the distance between when a magnetic moment comes in contact with the inner slit wall edge relative to when the other magnetic moment comes in contact with the outer slit wall edge, which results in different outcomes.

The magnetic moments will interact with the slit-wall edge differently...the two poles will attract or repel in such a way that certain photon trajectories become pushed or pulled off-course, and thus can never be realized.

I am calling these never-realized trajectories, "paths of impossibility"; which are represented by the empty regions on the back wall/screen. There is no interference. Constructive interference and destructive interference and nodes are all misnomers.

A single fundamental particle does not magically turn into a wave of infinite particles that interact with themselves, and take every possible path. There is no multiverse, and this is not superposition, nor uncertainty!

Rather, a single fundamental particle can only take one path.

The paths that can be realized are linear trajectories from the slit to the back wall, they depend of the declination angle as a singlet passes through one slit, and they result in the accumulated dotted columns on the back wall from quantized photon particles.

Electron-Positron Annihilation

Recall from the rules of singlet-singlet equatorial interaction…

When two singlets' equators are spinning inward together or outward together, they will be attracted to each other.

If two singlets are drawn towards each other (at their equators), and their equators collide at this edge-on angle, then these same two singlets will ani-synchronize, and then shoot apart in opposite directions, as photons.

Each singlet gains a second axis: the Axis of Propagation.

There is no annihilation.

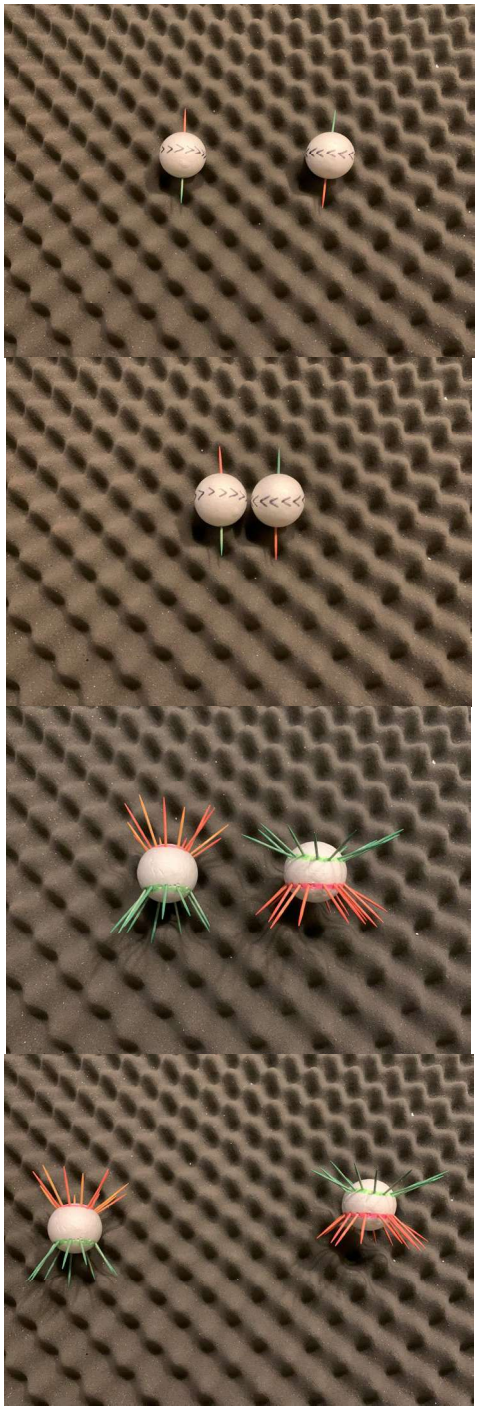


Figure 31

And so with electron-positron "annihilation",…a misnomer, matter is not destroyed.

Rather, the spin of the two particles just becomes more complex, as the two electron-positron-singlets become two photon-singlets. They were always, and will always be, fundamental particles.

Quantum Entanglement

The classical geometry of the collision, implies that each photon shoots-off with an opposite spin, such that if measured at the exact same time, one spin will look "up", and the other will look "down". A half-rotation later, one will look "down" and the other, "up". The collision caused a synchronization with a 180-degree offset. There is no faster than light communication.
The last set of panels is wavefunction collapse at observation…

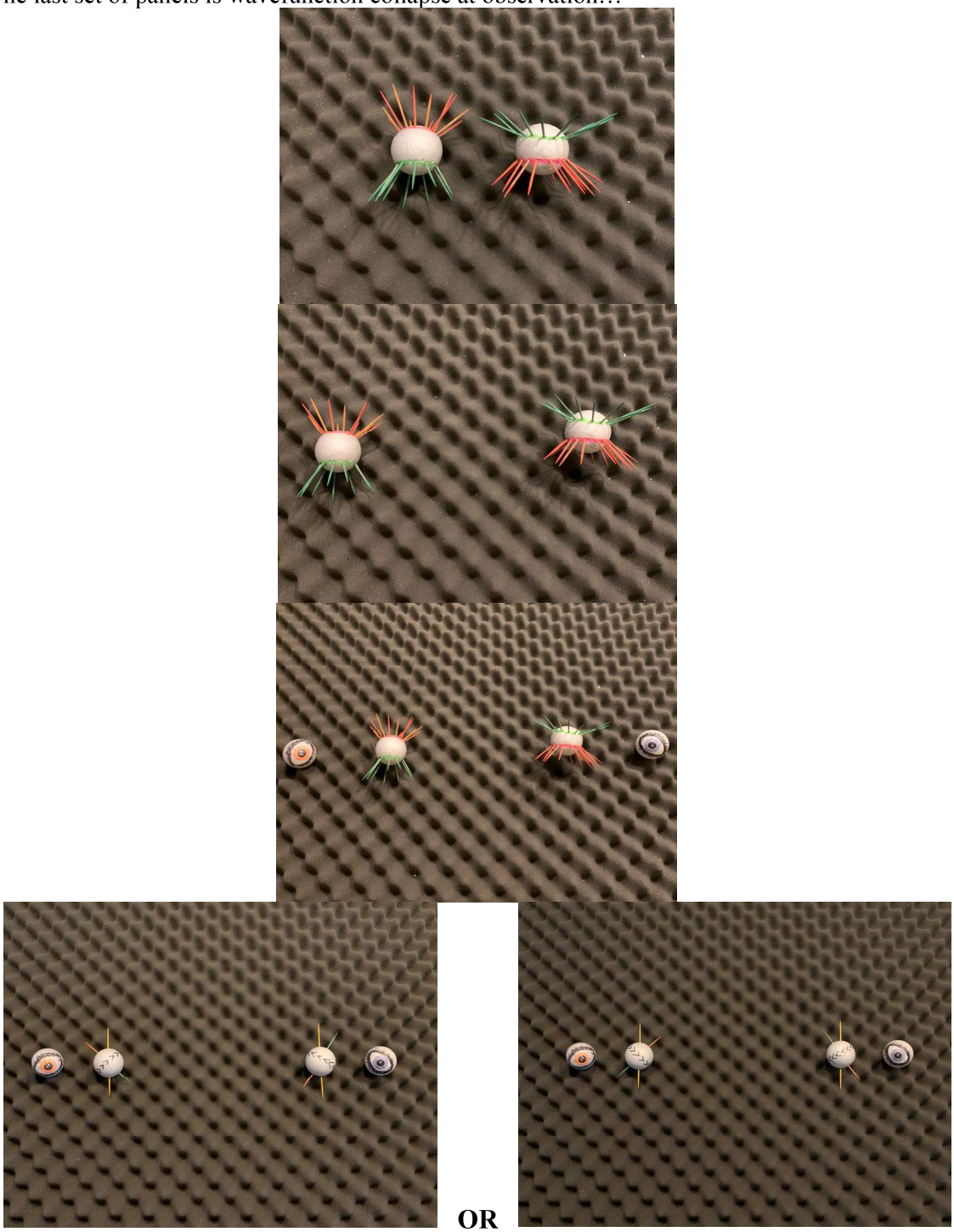


Figure 32

Bell's Theorem

Bell's inequality is mistakenly interpreted as eliminating local hidden variables. This is not correct. Bell eliminated local hidden variables traveling with constant speed along a linear vector. It is the constant speed along a linear vector, that allows terms to cancel in the inequality.

However, the propagating fundamental particle, due to the biaxial spin, contains magnetic moments that each move along their respective polar circle.

This means that the forward and backward motion of each of the magnetic moments is not constant, but rather accelerates and decelerates along the vector of linear propagation,…like the air nozzle on a rolling tire.

Consider dividing by the speed of light, so that we can observe a photon tumbling as it is propagating, with a frame of reference head-on to its axis of propagation (yellow toothpick). We observe the green magnetic moment tumbling around its polar circle…

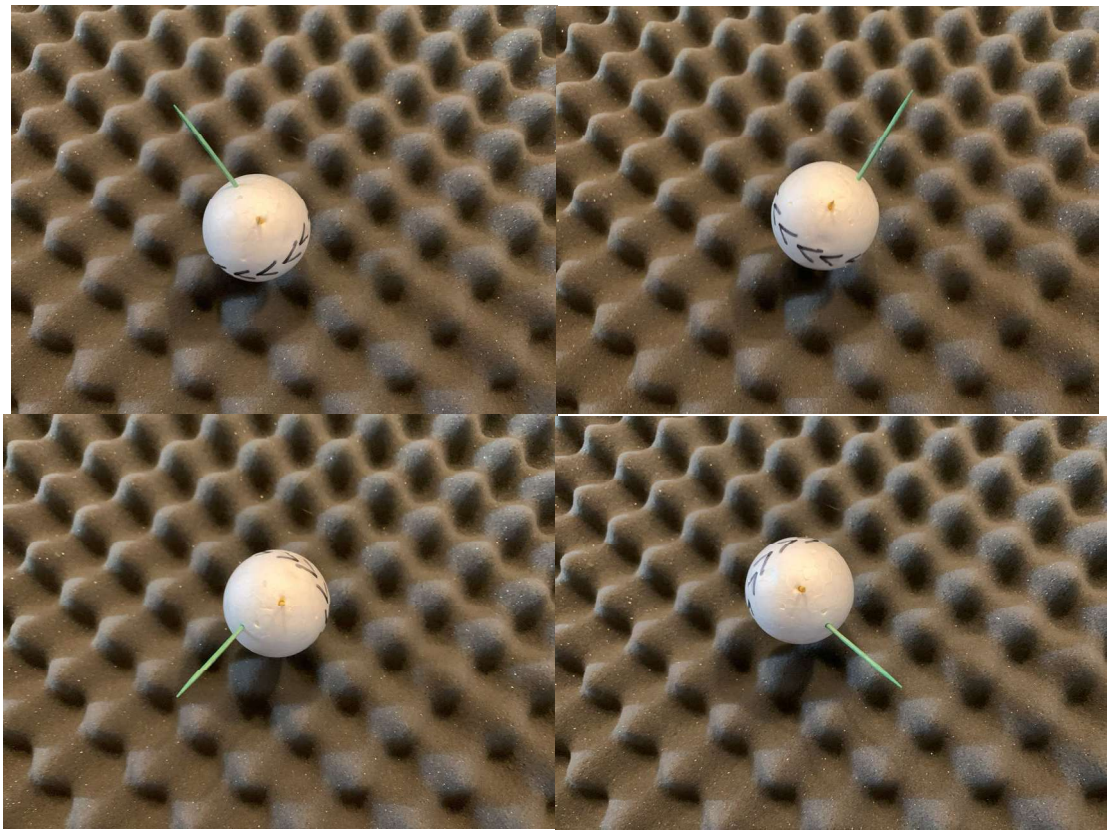


Figure 33

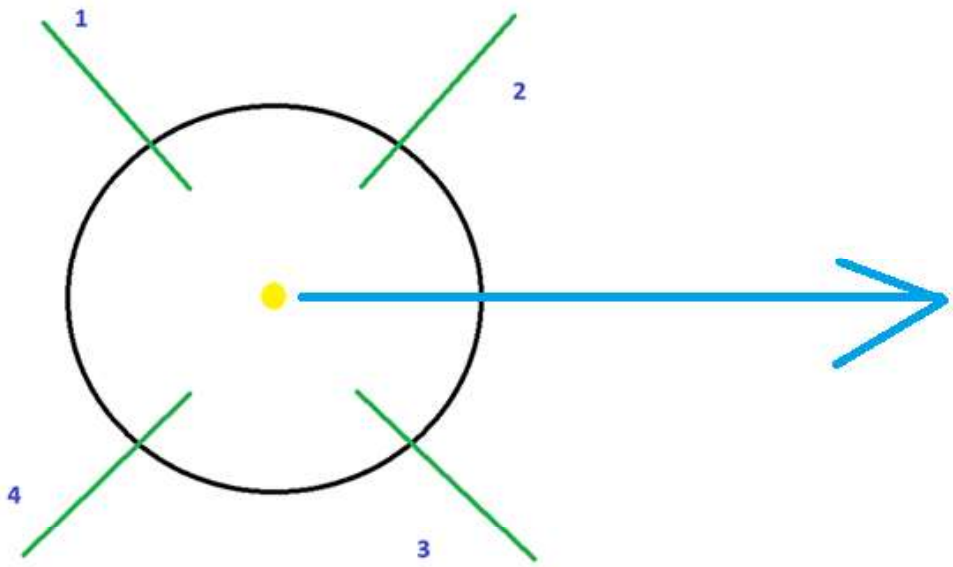


Figure 34

Specifically, as the magnetic moment traverses across the top (1>2) and along the bottom (3>4) of the polar circle, they are moving with and against the motion of propagation (blue arrow), respectively.

However, as the magnetic moment traverses down through the most forward part of the polar circle (2>3), and then later upwards along the most backwards part of the polar circle (4>1), part of the constant circular motion is in the vertical component (orthogonal to the vector of propagation), and thus the total forward motion (propagation motion plus tumbling motion) is not constant, but accelerates and decelerates over time, which only simplifies to a harmonic oscillator, when focusing on a line instead of a plane.

It is clear that for each magnetic moment, the "degree of forwardness/backwardness" must accelerate and decelerate over time, as the magnetic moment tumbles in a circle while propagating.

As we saw with electron-positron annihilation and quantum entanglement, two colliding particles will shoot away at a 180-degree offset. As such, the synchronized spin of two fundamental particles will always show higher pairwise correlations when the two magnetic moments are at their most forward and backward along the vector of linear propagation, and their minimal pairwise correlations when the two magnetic moments are equally forward and backward.

Bell's inequality is scientific evidence that the fundamental particle is a classical, spherical particle, with biaxial spin. Bell's inequality demonstrates that while there is not a local hidden variable in which the magnetic moments are moving forwards and backwards at a constant speed along the vector of linear propagation, there is in fact a local hidden variable (or a roulette wheel of variables) in which the magnetic moments are cycling over time through accelerating and decelerating along the vector of linear propagation.

In the diagram below, the line in red is the incorrect model in which the magnetic moments move along the vector of propagation at constant speed, while the line in blue (labeled Quantum), is the model in which the magnetic moments accelerate and decelerate along the vector of linear propagation.

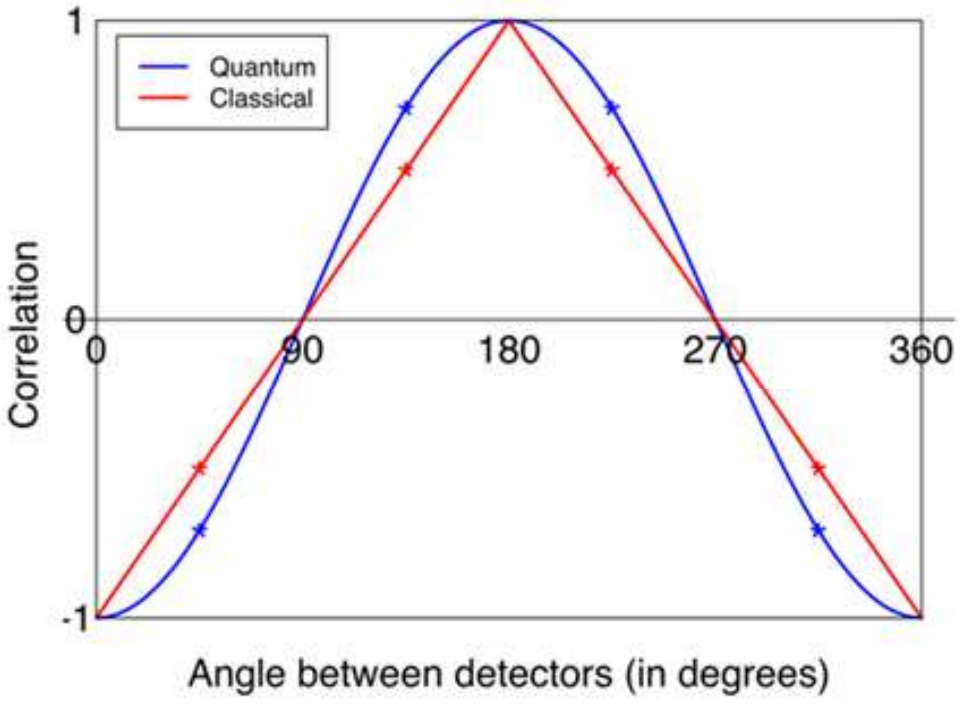


Figure 35 (source: https://brilliant.org/wiki/bells-theorem/)

Neoclassical quantum physics is both local and deterministic when taking into account the complete, complex biaxial spin in three dimensions. The particle doesn't carry a static "state" during propagation. Rather, the spin is dynamic and complex, cycling through a continuous range of axial orientations. [And there are two polar circles!]

The Triplet

Given the rules of singlet-singlet electromagnetic interaction, two singlets' equators spinning inward together or outward together will be attracted to each other, but these two singlets can never be stable in this orientation, as it would cause (the phenomenon that we mistakenly call) electron-positron annihilation; .e. they would shoot apart as two photon-singlets.

However, three singlets can combine to form what I am calling a "triplet", with the adjacent equators at 120-degree angles. This works because no two singlets will have head-on equators spinning inward or outward (which would be repulsive).

It is the equatorial offsets that allow the triplet to be stable.

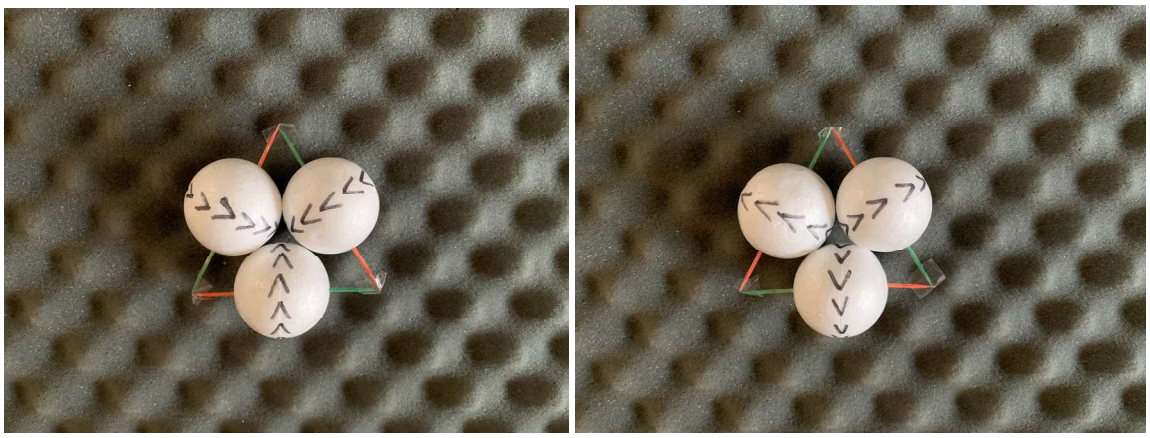


Figure 36

In my model, every triplet has both an “inside-pole” and an “outside-pole”, depending if the equators are spinning towards the center of the triplet, or away from the center of the triplet.

The Planck axes of the three fundamental particles, all lie on the same plane, forming an equilateral triangle.

The triplet’s central axis is orthogonal to the triplet's equatorial plane (that contains the three singlet fundamental particles).

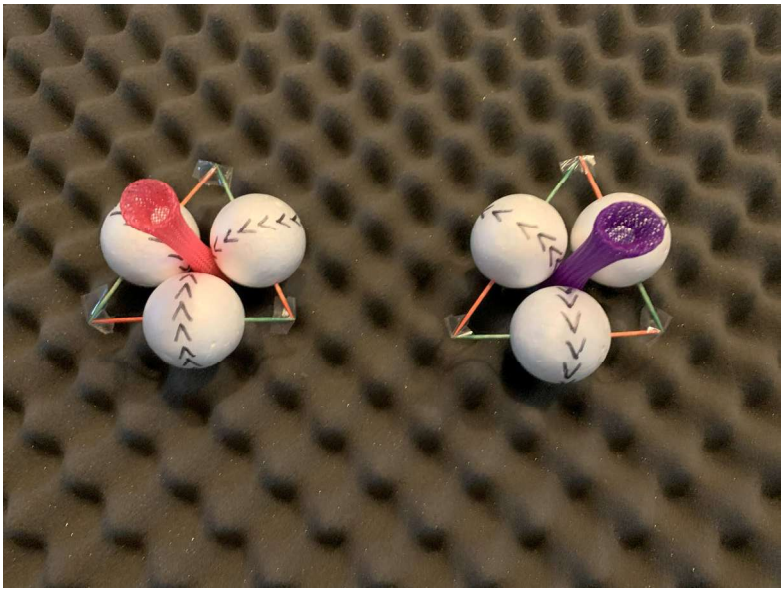


Figure 37

Notice the quantum symmetry given the triplet's inside-pole, and the triplet's outside-pole.

There is a handedness to the triplet, that depends on the observer's frame of reference.

Similar to Alice and Bob observing different poles of the singlet-dipole, an observer viewing the inside of the triplet head-on, might erroneously call the entire composite particle a "proton", and mistakenly assume intrinsic charge.

Likewise, an observer viewing the outside of the triplet head-on, might erroneously call the entire composite particle a “proton” as well, not realizing that there is handedness to what they are observing.

An observer that sees both an inside triplet and an outside triplet at the same time, might refer to one entity as a proton and the other entity as an anti-proton, and with ignorance, not care which label is which.

In my model, a triplet contains both a “proton" and an "anti-proton", because they are just the opposing sides of the same composite triangular composite particle.

A proton is essentially the North Pole of the triplet-Earth,…a proton is not the Earth itself.

As we saw with singlet dipoles, we must be cognizant as to whether we are counting triplets, or triplet-sides, as there are always twice as many triplet sides as there are triplets.

We must refer to a triplet as a triplet, instead of referring to it as a proton. Instead of saying the proton-side of the triplet, it would be more accurate to refer to the inside of the triplet versus the outside of the triplet.

To achieve the theory of everything (including quantum gravity), we must no longer refer to the building blocks of matter as protons and electrons, but rather as triplets and singlets.

It is not that an electron is attracted to a proton, but that a singlet is attracted to a triplet.

It is not that negatively charged electrons move around positively charged atomic protons, but that singlet-dipole sides are exclusively attracted to a specific side of the triplet composite entity.

The Strong Force

Three singlets form one triplet. There are no quarks.
There is no strong force. There is no gluonic force.

What we think of as the “strong force” is due to the attraction of:
-three singlet equators (at 120-degree angles); and
-six singlet poles (opposite poles at offset angles…not head-on).

This is a conglomerate of pure attraction.
It is all just electromagnetic;…poles and equators.

Proton decay is not readily observed, because the three singlets are so tightly bound together in this configuration.

The triplet composite particle has an effect on its environment that is different than the cumulative effect of three separate singlets, and it gains a superpower.

The triplet has the ability to attract singlets.
Specifically, the central pole of the triplet attracts the Planck pole of the singlet.

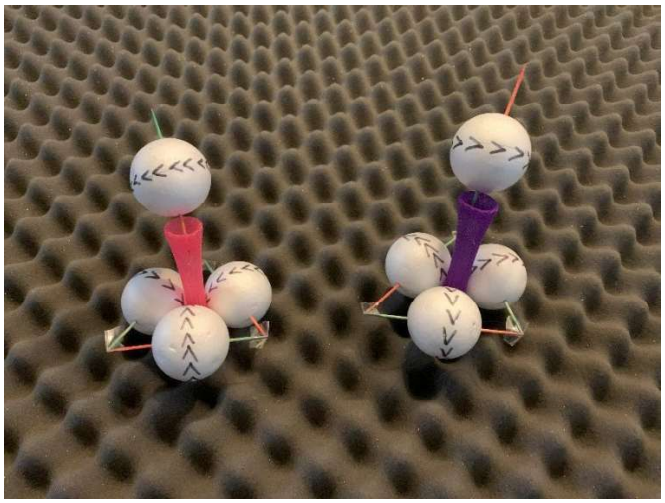


Figure 38

Importantly, the singlet-triplet attraction is exclusive…only a specific dipole side will be attracted to a specific triplet side.

Importantly, with each triplet having two sides, each triplet gains the ability to attract any singlet, as a free singlet can reorient its Planck pole to the triplet side that it finds attractive.

One triplet can hold two singlets; a clockwise pole on one side, and a counter-clockwise pole on the other side. With one singlet on each side of the triplet, the Pauli exclusion principle is satisfied.

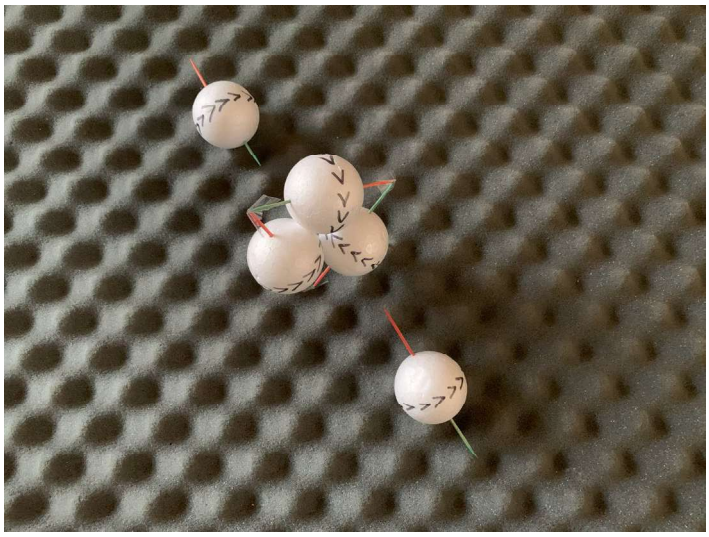


Figure 39

Electromagnetism: Triplet vs Singlet

The pole of the triplet (inside or outside) is attracted to a pole of the singlet.

[Note: the triplet likely rotates about its polar axis.]

An observer might call the composite entity, consisting of an inside-triplet-pole electromagnetically attracted to a counter-clockwise-(red)-singlet-pole (thus making the clockwise-green-pole visible to an observer, when viewed from a head-on frame of reference), a "proton plus an electron".

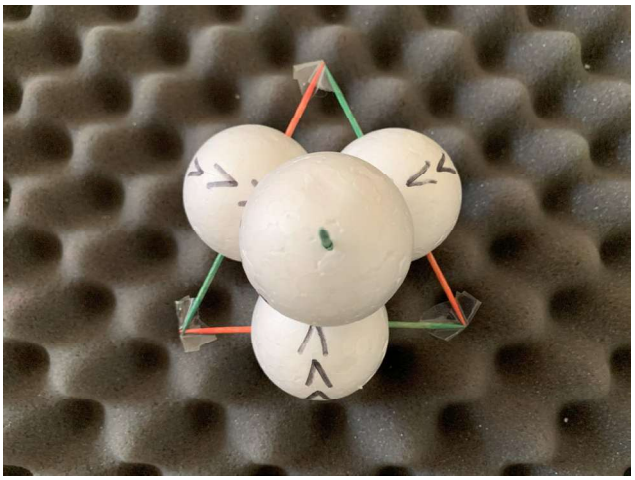


Figure 40

An observer might call the composite entity consisting of an outside-triplet-pole attracted to a clockwise-(green)-singlet-pole (with the counter-clockwise-(red)-singlet-pole, visible to the observer, when viewed from a head-on frame of reference), a "neutron".

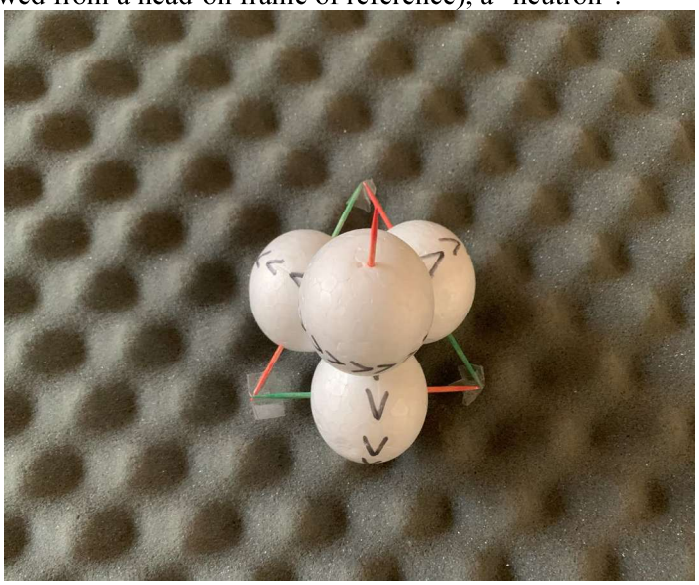


Figure 41

In my model, neutrons are comprised of four singlets. Importantly, there are no neutrinos!

This insight will have vast ramifications across the interdependent domains of physics, from the Standard Model of particle physics to stellar nucleosynthesis, and is required to achieve a comprehensive theory of everything.

[Regarding any experimental "missing mass" from the neutron decay products,…it is only missing because the observer erroneously did not account for changes in the biaxial declination angles of adjacent singlets in the surrounding singlet density field…to be described in a later section.]

Nuclear Decay

Given this new model, nuclear decay equations will need to be corrected for:
-neutron emission;
-double neutron emission;
-beta decay/beta minus decay;
-double beta decay;
-beta plus decay/positron emission;
-double positron decay;
-electron capture; and
-double electron capture.

In beta decay/beta minus decay, a neutron is supposedly converted into a proton plus an electron, and an electron-anti-neutrino.
What is actually happening is the neutron was really just a triplet plus a singlet, and there is no neutrino.

In beta plus decay/positron emission, a proton is supposedly converted into a neutron, and a nucleus emits a positron and an electron-neutrino.
I argue that this process does not happen in physical reality.

Based on our new understanding, look how unbalanced the equation for beta plus decay/positron emission appears...
A proton (1 triplet), supposedly gets converted into a neutron (1 triplet and 1 singlet) plus a positron (?) plus a separate neutrino (?).
That equation is nowhere near balancing. It suggests that 1 triplet, i.e. 3 fundamental particles, somehow gets converted into possibly 6 particles.

The evidence comes in the quirk that this process "only happens inside a nucleus". Why? Because the equation can't balance without adding fundamental particles to the left side of the equation that were previously unaccounted for in theory (while doing away with the concept of the neutrino). What is actually happening when a proton converts into a neutron, is that a triplet gains a singlet and becomes a triplet-singlet composite entity.

With electron capture, a proton in the nucleus, supposedly captures an orbiting electron, converts into a neutron, and emits a neutrino.
It should be clear that the proton (1 triplet), plus the electron (1 singlet), combine to form a neutron, and there is no neutrino.

The Weak Force

There is no “weak force”.

Quark theory attempts to explain the hypothetical transformation of quarks through the weak interaction, but we already know that the triplet is elegantly made up of three singlets, and that the neutron is elegantly made up of four singlets.

In quark theory, a neutron is converted into a proton, electron, and electron-anti-neutrino, by means of a down quark being transformed into an up quark through the weak interaction, which causes the emission of a virtual W-minus boson, which decays into the electron and the electron-anti-neutrino.

It is now clear that the W-minus boson is a plug, needed to conserve the lepton number.
As such, we can now see that there is no weak force, which was a plug to reconcile quark theory and beta decay, which had equation-balancing problems.

In addition, the weak force had problems with quantum symmetry violations (both parity and charge-parity symmetries),...but we have already addressed quantum symmetry problems at the very foundation of the hypothesis, with a model that incorporates singlet poles and triplet sides.

Thus, a Grand Unified Theory (GUT) has been achieved, with a unified, internally-consistent model to explain and reinterpret the rules of electromagnetism, a simplified explanation of the strong force, and doing away altogether with the weak force,...all while retaining quantum symmetry, in a new and innovative way.

We can now begin to use first principles, i.e. the classical biaxial dipole fundamental particle in an ideal vacuum,…to build-up from the very small (quantum) to the very big (cosmological).

Atomic Building Blocks

All matter (and all energy) is ultimately just made up of fundamental particles; singlets.

We need to shift the paradigm that matter and anti-matter destroy each other,
and instead think of singlet-poles and triplet-sides, combining to form atoms and molecules.

Triplets and singlets combine at the poles.

A triplet can attach to one or two singlets, with one singlet on each side.

Each triplet-side has an exclusive singlet pole-side that it will interact with.

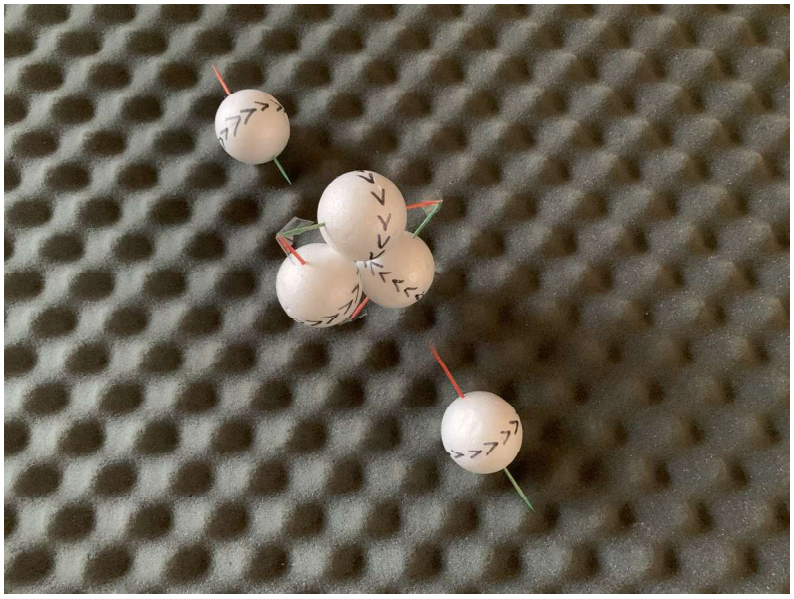


Figure 42

One of the triplet-attached singlets can attach to a second triplet,
such that a singlet becomes sandwiched in between two stacked triplets.

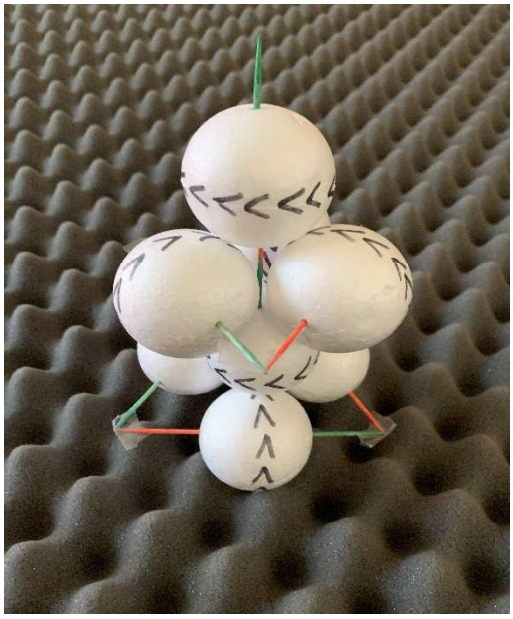


Figure 43

Perhaps the figure above represents deuterium: with 1 “proton”, 1 “electron”, and 1 “neutron”.

It is the sandwiched-singlet that makes triplets connect with each other; that allows so called neutrons to bond with so called protons in order to build atoms and molecules.

Atomic Orbitals

A triplet is an architectural blueprint, that tells the many attracted singlets in the field of fundamental particles, where and how to move around it.

The triplet blueprint influences singlet, orientations, declinations, precessions.

The singlets do not gravitationally spiral-in towards the center of the atom. The Bohr model and thus the classical electron radius are incorrect.

Rather, the singlet's Planck-pole tries to orient itself with the center of a triplet-side, while being pushed and pulled by other singlet poles and equators in the atom, as well as by other singlets in the field of fundamental particles.

A singlet sandwiched in between two triplets may be somewhat locked into place, as it forms the "neutron". In contrast, a singlet that is attached to only one triplet-side may be free to move about the triplet.

As the singlet moves around the triplet and tries to reorient its pole towards the pole of the triplet, it likely exhibits gyroscopic precession around the triplet, with the singlet's external pole moving more than the attracted inner singlet pole, given the arced trajectory.

The geometries of the electron orbitals and subshells are shaped by triplet and singlet polar and equatorial, attraction and repulsion dynamics.

Statistical probabilities indicate which regions are more likely, and which regions are less likely to find a singlet.

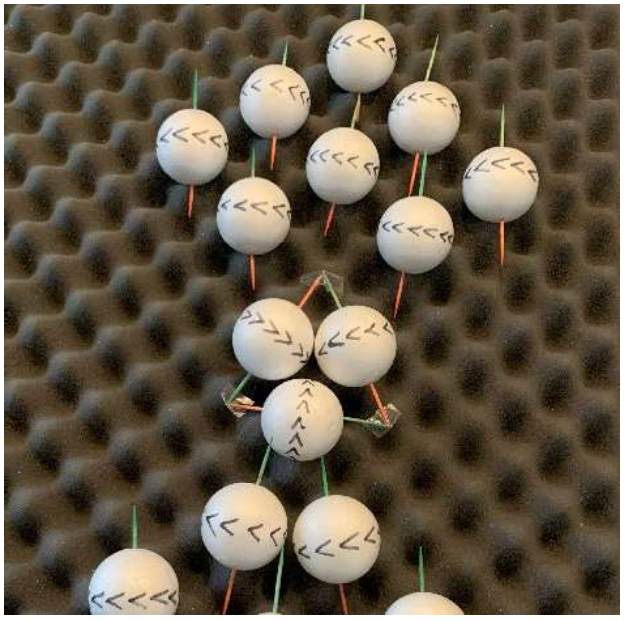


Figure 44

As the singlet precesses around the triplet axis, it may be forced to alter its orbital path and declination in order to comply with other particles' poles and equators.

As such, the singlet declination orientation is dynamic, and location-dependent.

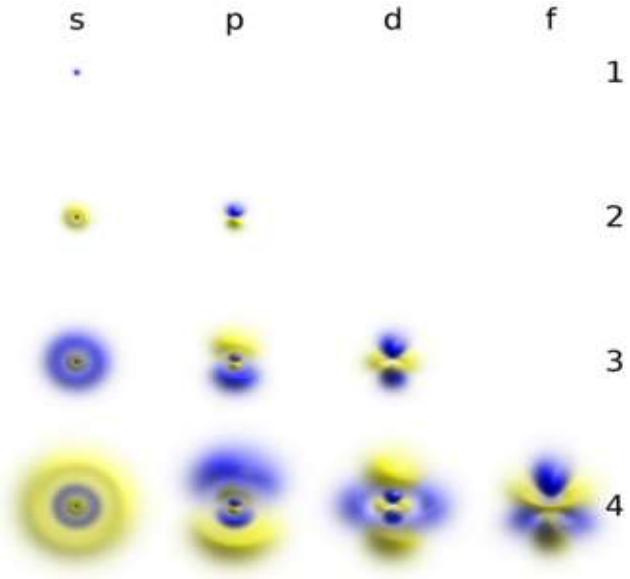


Figure 45 (source: Wikipedia)

The orbiting singlets will only be allowed certain declinations within specific orbitals and subshells, as they gyroscopically precess around the triplet axis.

Like the double-slit experiment, there are certain orbital "paths-of-impossibility", due to singlet poles being pushed and pulled from certain trajectories; i.e. the low probability regions.

The shapes and orientations of the electron orbitals hint at the locations and orientations of the atomic triplets, to which they are attracted. For example, a ring-shaped electron orbital may hint that the singlet is attracted to a triplet that is itself either moving or reorienting in a circular path.

The Photoelectric Effect

In the photoelectric effect, a photon-singlet knocks out an electron-positron-singlet from an atomic orbital.

This phenomenon demonstrates that a singlet can have one or two axes, and that the outcomes of particle interactions are a function of biaxial declination angles (i.e. photon frequency and singlet declination in the electron shell).

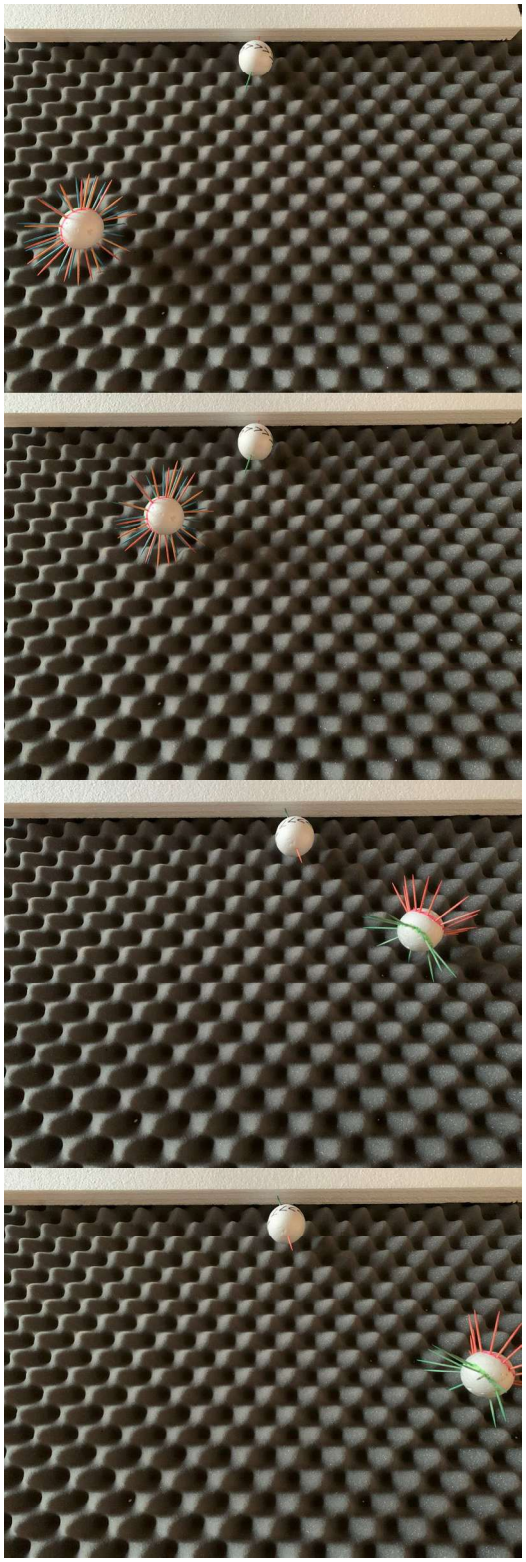


Figure 46

Electrons do not radiate energy, and electron interactions are not mediated by photons. Rather, singlets interact with other singlets in the field of fundamental particles, such that energy is conserved, and angular momentum is conserved. [Energy being the complex paths of the two magnetic moments.]

The fundamental particle may spin on one axis with no declination (the electron-positron dipole form of the singlet), or it may spin on two axes with a biaxial declination (the photon-form of the singlet).

Especially with the photoelectric effect, and with electron-positron annihilation, it is important to emphasize that fundamental particles are not created nor destroyed, but are eternal.

The Hydrogen Spectral Series

The spectral series of hydrogen provides evidence that a triplet blueprint allows for multiple orbital regions through which an electron-positron-singlet can pass, during orbital precession. Each energy level/ electron shell, is a function of the singlet biaxial declination.

A singlet in orbit around a triplet has one Planck pole targeting one triplet side, and has asymmetrical polar circles (polar circles with different radii) as it undergoes precession in orbit.

The opposite Planck pole targets the opposite side of the triplet when it is in that vicinity.

The singlets in the higher electron orbitals have a higher energy state, because they are more like gamma photons.

The singlets closer to the triplet have a lower energy state, because they are more like the electron-positron form of the singlet.

The singlet in the 1s orbital (aka the "lowest energy electron") has the least declination...it is the most electron-positron-dipole-like and least gamma ray-photon like. The 1s singlet is the most tightly-bound to the triplet side, and the hardest to displace by a photon in the photoelectric effect.

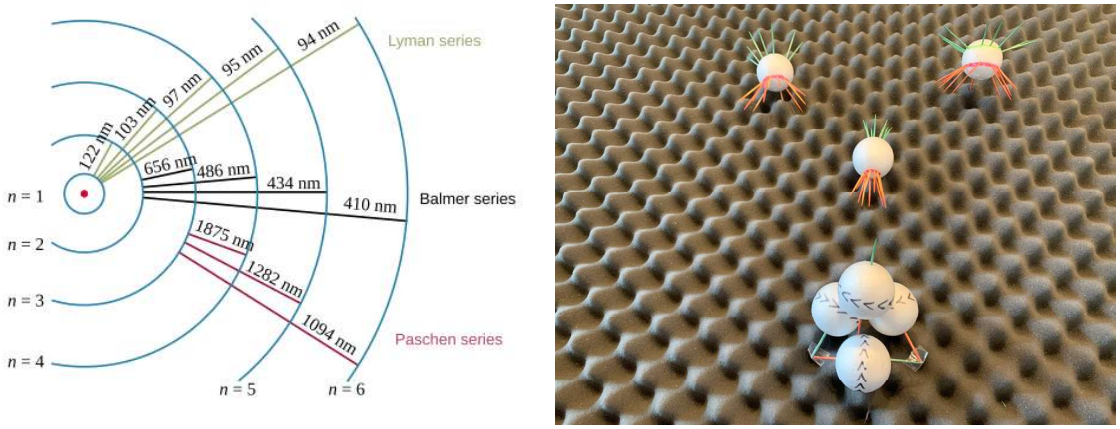


Figure 47 (source: Wikipedia)

Photons with sufficient energy, or sufficiently high frequency (which we now understand to be tangential speed of the tumbling magnetic moments along the polar circle) are able to interact with an atomic electron-positron-singlet, so as to move it to a different energy level.

The singlet transitions are a function of the difference between energy levels, which we can now see is a function of the difference between biaxial declinations.

Reinterpreting Electron Mass as Singlet Biaxial Declination

A key to understanding the theory of everything is that we need to have a paradigm shift of what exactly "mass" is, when it comes to "electrons". We need to instead think of fundamental particles (singlets) as having mass and energy due to biaxial declination.

Because the declination angle can change, the mass and energy of a singlet is dynamic.

We need to consider the photon quadrant angle from 90-degrees to 0-degrees, from gamma ray declination all the way to when the wavefunction is collapsed and the singlet is only spinning on one axis, in the electron-positron form of the singlet.

We also need to be cognizant if we are calculating a single pole or both of the singlet's poles, in quantifying the particle's ability to interact with other particles, and furthermore, we need to take into account the orientations of all the particles in the system.

It is important to highlight the paradox that due to E=mc-squared,
more mass has traditionally been associated with more energy.

However with this new model of the biaxial fundamental particle, more declination means a higher tangential speed of the tumbling magnetic moment, and therefore more energy.

While less declination results in the collapse of the wavefunction, allowing a photon to become a dipole, and enabling polar structural integrity that allows for electromagnetic charge and for the "electron" to appear to exhibit "mass".

Very roughly speaking, photon energy is the opposite of electron charge; i.e. high declination vs low declination.

The Gravitational Field --> The Singlet Density Field

A group of singlets surrounding a mass of triplets (such as a molecule, a baseball, or a planet), will comprise a field of singlets. Each singlet wants to get close to the triplets (represented by the green sphere below), but they can't all get there, because they will be repelled by other singlets' poles and equators. Singlets will be crowded-out by other singlets.
I am calling this field of fundamental particles, the "singlet density field".

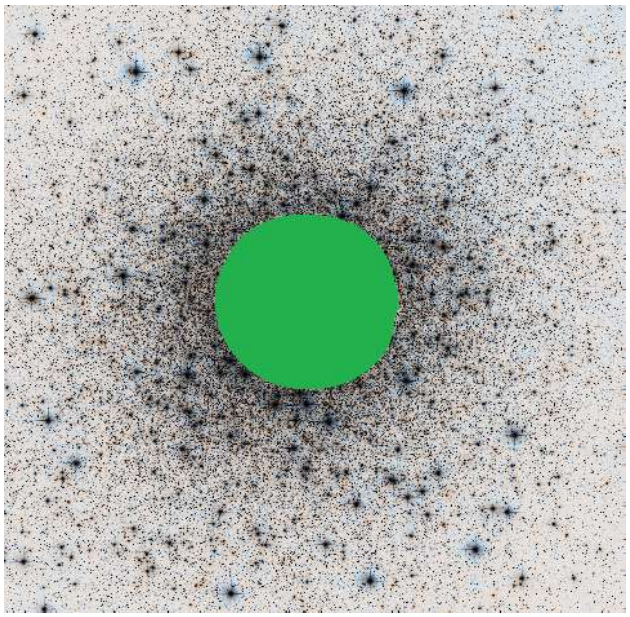


Figure 48 (original image source: Wikipedia)

The density of the singlet density field falls off proportional to the square of the distance from the mass of triplets.

The singlet density field *is* spacetime.

The gravitational field is a field of classical fundamental particles with biaxial spin.

A larger, or more dense group of triplet composite particles will attract a larger group of singlets, but the density gradient or slope, due to the singlet crowding-out effect, will be constant,...as governed by the universal gravitational constant.

As such, it is the "mass" of atomic matter (the quantity of triplets) that determines the density of the singlet density field, for a given distance from the group of massive triplets.

The Einstein field equations incorporate the Newtonian constant of gravitation to quantify the relationship between the geometry of spacetime and the stress-energy-momentum tensor.

We know that each individual singlet has its own Planck axis orientation and biaxial declination, which is dynamic and not static, and so, more advanced mathematics for quantum gravity must take into account myriad singlet pole orientations, and complex spin as represented by the biaxial declination (and two polar circles), in a volume of flat space in three dimensions.

The Infinite Universe

The Universe is temporally infinite; eternal.
There was no beginning, and there will be no end.

The Universe is unbounded; it extends infinitely in three dimensions.
The Universe comprises every location, and there are no other locations.
There is no multiverse.

There was no Big Bang.
The Universe does not expand, nor contract,...it never has and it never will.
And there was no accelerated cosmological expansion long ago.

We will reinterpret cosmological redshift and cosmic inflation/ dark energy, as well as explain the formation of stars and galaxies and large scale structure in the Universe, with a radical new hypothesis.

The Universe = (The Ideal Vacuum + Matter and Energy Content)

First, let us distinguish between the hypothetical, empty space of the Universe, and the content within the Universe.

I will call the idealized, perfectly empty space, the "ideal vacuum", which has no curvature; it is perfectly flat. There is no location in the visible Universe that is an ideal vacuum, but the concept will allow us to discuss deviations from the ideal vacuum; i.e. the varying singlet field densities, aka, the manifolds of spacetime.

It is the content of the Universe, that causes the Universe to not be flat. The content can be divided into matter/mass (triplets) and energy (singlets). Of course, both are made up of fundamental particles, and there is nothing else in the Universe besides fundamental particles.

Spacetime is a function of the density of the singlet density field.

Triplet-matter mass tells spacetime how to curve,…and the singlet density field of spacetime tells triplet-matter how to move. This is how we bridge quantum physics and general relativity.

This next part is important...
Scientific measurements are spacetime-dependent, because our rulers and clocks are governed by the contours of the spacetime density.

As such, we must realize that the speed of light relative to spacetime is always constant,
while the speed of light relative to the flat ideal vacuum, is not constant,
although it cannot be measured, because all observers' instruments are affected by spacetime.

Observers can only perform translation, interpreting the invariant truth of physical reality into their own spacetime-dependent frames of reference.

Relative to absolute flat space, a variable speed of light is reconciled, using variable permittivity and variable permeability, which depend on the density of the singlets in the fundamental particle field.

The permittivity of spacetime relates to the density of singlet poles, which slow down the speed of light relative to the ideal vacuum.

The permeability of spacetime, relates to the density of the singlet equators, which slow down the speed of light relative to the ideal vacuum.

A photon-singlet travels at "c" in both spacetime and in the perfect (hypothetical) ideal vacuum. Any content will affect permittivity and permeability and slow down the speed of light relative-to-the-ideal-vacuum, while it continues to travel at c relative-to-spacetime, as a more dense singlet density field also causes clocks to slow, which affects an observer's measurements.

Note that if a frame of reference is seeing more singlet equators for a given density, then it must be seeing fewer singlet poles, for a given density (because the polar axis and the equatorial plane are orthogonal). Likewise, if the frame of reference is seeing more poles, then it must be seeing fewer equators.

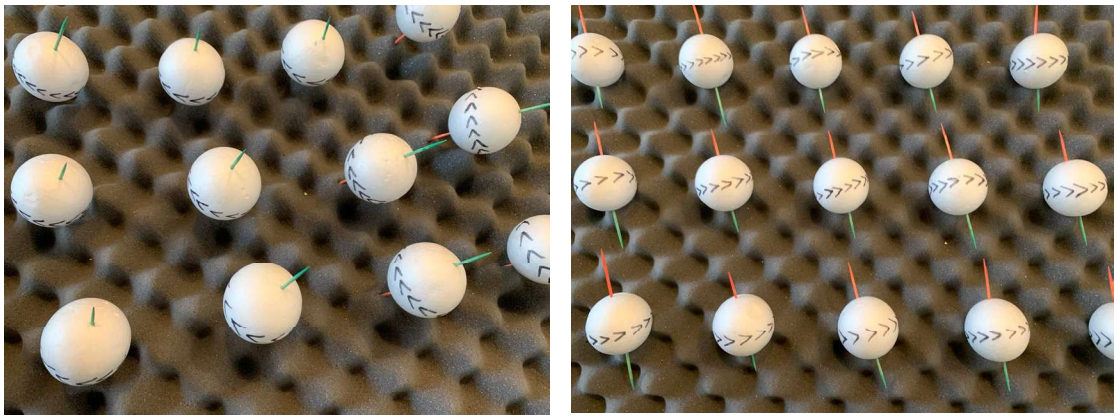


Figure 49

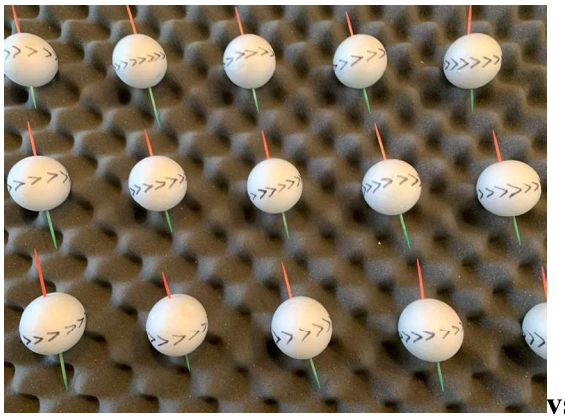
To reiterate, the singlet density field content of the Universe causes light to slow, but it also causes clocks to slow....relative-to-the-ideal-vacuum.
A higher density of the singlet density field means more particle interactions, a slower speed of light, and slower clocks (relative to flat space).

Consider an analogy whereby you are about to leave a party and say your goodbyes, and you can either shake hands (permittivity), or you can hug (permeability) each person on your way out. The more people that are in your path, the longer it will take to make it to the door.

Notice how accelerating your speed through the people of the room would be effectively similar to increasing the density of people in the room. In both cases, there would be an increasing number of people to interact with per unit of time. An acceleration is like an artificial increase in density. This concept is utilized to bridge the classical and the quantum, in a unified model of special and general relativity, which incorporates the attraction of singlet poles and triplet sides.

We can see how both the electromagnetic field and the characteristics of spacetime can be independent quantities and yet comprised of the same fundamental particles.

The electromagnetic field is due to the homogeneity (or lack thereof) of the orientations of the poles and equators.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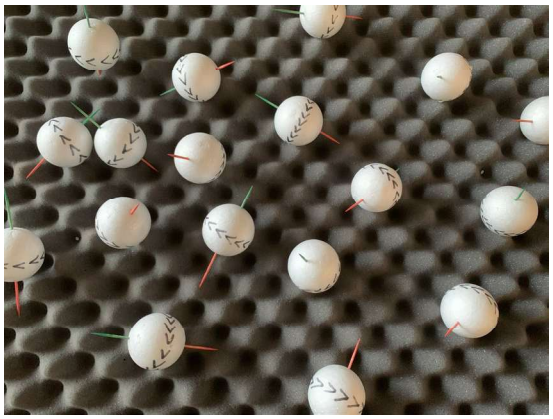


Figure 50

Spacetime is due to the density of the singlets in the fundamental particle density field.

Figure 51

For example, a handheld magnet with its rigidly-oriented triplets, will force the nearby fundamental particles (in the surrounding singlet density field), to exhibit specific orientations, resulting in a strong electromagnetic field at short distances, despite the handheld magnet having a weak gravitational field.

Whereas, a planet with a large gravitational field may have a weak electromagnetic field if the singlet orientations lack homogeneity (even if dense).

The Quantum Field

The many fields of mainstream quantum field theory and their characteristics, must emerge from the fundamental particle field.
Specifically, the fundamental particle: densities; biaxial declinations; orientations; precessions; propagations; and combinations,…in a perfectly empty and infinite, ideal vacuum.

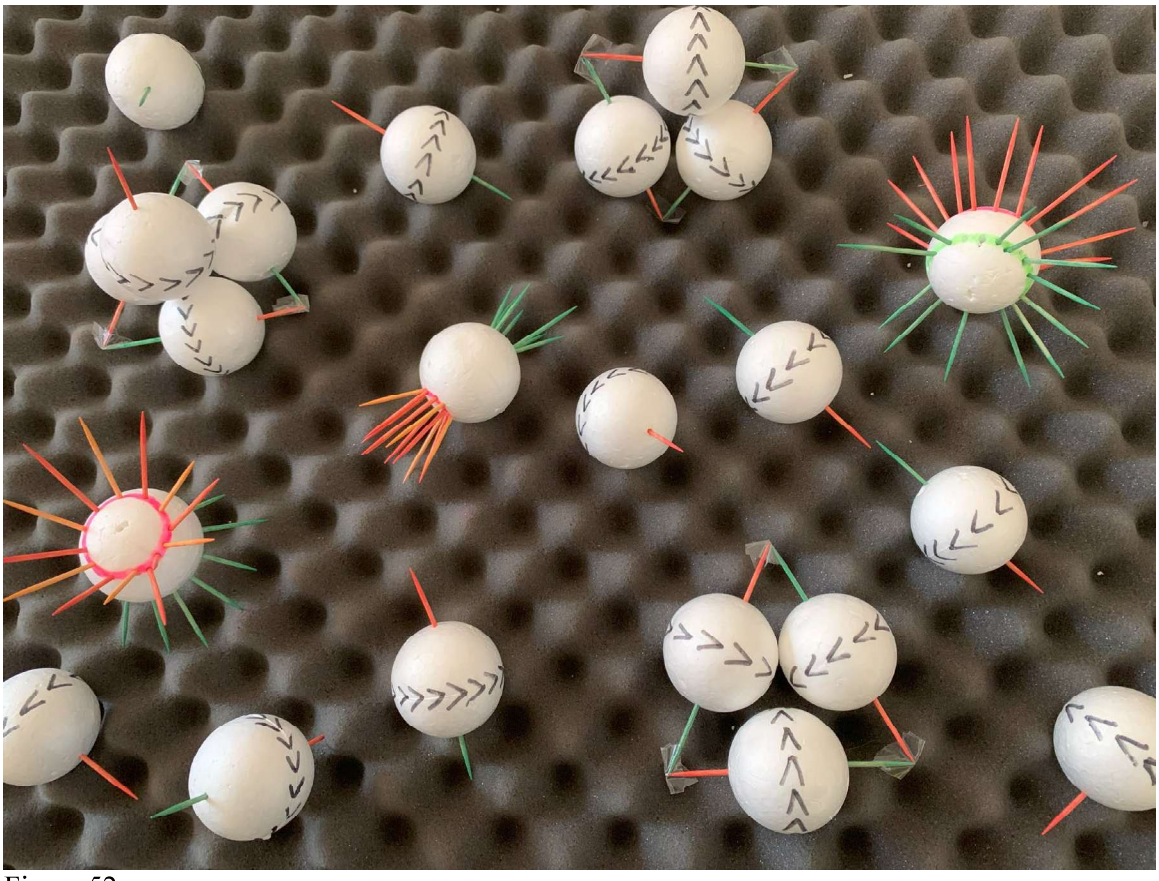


Figure 52

Neoclassical Photon Redshift and Blueshift

In this section, we cover the geometric models for:
gravitational blueshift and redshift;
cosmological redshift; as well as:
the cosmic microwave background radiation;
dark energy; and
Doppler redshift and blueshift.

Gravitational Blueshift

(Planck spin appears faster, due to the slower clocks caused by a more dense singlet density field)

Planck's constant is constant relative to flat space.

That is, the axis of fundamental Planck spin, for all fundamental particles, spins with a constant angular frequency.

However, in a more dense singlet density field, clocks will slow, allowing more Planck spin between clock ticks.

As such, the angular frequency of fundamental Planck spin will appear to increase, in a more-dense, singlet density field (spacetime).

As a propagating photon's magnetic moments tumble over the axis of propagation along their respective polar circles, there will appear to be more magnetic moment tumbling per unit of slower time (relative to the density of fundamental particles that comprise spacetime).

This means that the tangential speed of the magnetic moments appears to increase.

Importantly, this effect is not due to a changing declination of the photon (aka a changing size of the polar circle), but rather, is due to the apparent angular frequency of the fundamental rotational Planck spin.

Such is the case when a photon falls vertically towards the Earth, as in the Pound-Rebka experiment. The photon propagates downwards through an increasing density of the singlet density field, which causes the light to blueshift.

However, in the Michelson-Morley experiment, the photon travels through an unchanging density of the singlet density field (parallel with the surface of the Earth), and the horizontal direction of the photon trajectory is irrelevant, in terms of causing a redshift or a blueshift.

Cosmological Redshift

(accumulated photons turns relative to the flat space of the ideal vacuum, due to photon propagation through asymmetries of the singlet density field)

Again, we need to be cognizant of both spacetime (singlet density field) and the ideal vacuum.

A photon travels in a geodesic in spacetime.

However, relative to the flat space of the ideal vacuum, the photon-singlet will turn towards the more dense singlet density field. We observe light bending due to gravity in gravitational lensing phenomena.

Importantly, the redshift from a single bending event may be so miniscule that it cannot be scientifically measured. The diagrams below are greatly exaggerated…

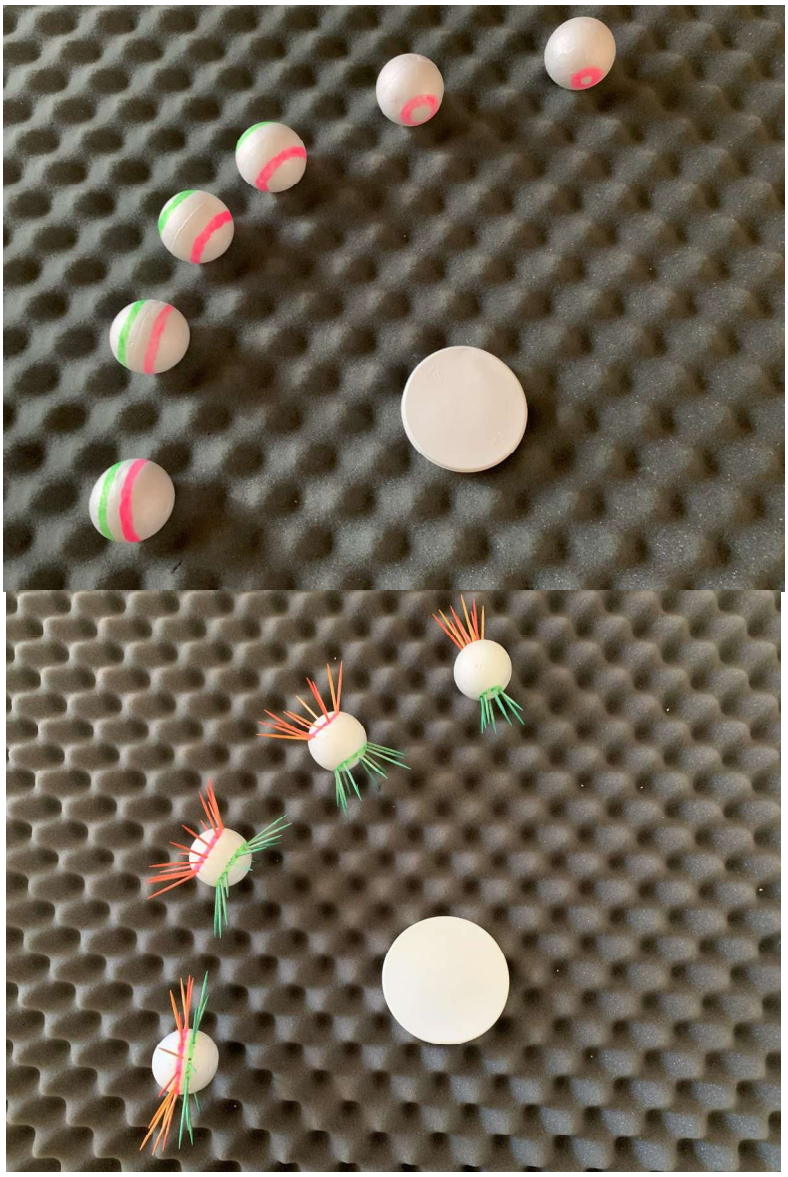


Figure 53

The path bending is due to the asymmetry of the density relative to the two magnetic moments.

As the photon propagates through the density asymmetry, the polar circle on the side with the more dense singlet density field will shrink more than the farther polar circle, causing a change in direction, and the photon loses angular momentum; a redshift.

Traveling at the speed of light, a propagating photon's poles very quickly pass by the many individual singlets of the dynamic singlet density field, and the photon's poles will attract and repel the poles of the adjacent field-singlets ever so slightly, such that the loss of angular momentum will dissipate through the briefly-adjacent singlets of the singlet density field.

[Note that the density and intrinsic energy of the singlet density field is dynamic, because singlet biaxial declinations and orientations are continuously changing.]

The redshift from a single bending event may be so miniscule that it cannot be scientifically measured. However, the redshifts from path bending accumulate over many events and so the accumulated effect of a million such events, for example, can be scientifically measured.

[We can calculate the average amount of path bending and redshifting that a photon undergoes per unit of distance in light-years. However, it is important to remember that the average is only an approximation of the actual redshifting that takes place, which depends on the particular densities of the singlet density field along that specific propagation trajectory.

Cosmological redshift is due to the cumulative effect of many turns of a propagating photon. It is correlated with, but not caused by propagation time and distance. As such, it is different than the previously-rejected "tired light" model of Zwicky.

Other important differences relate to Zwicky's use of particle collisions (scattering) rather than bending, as well as with errors in regards to why and how stars radiate energy (and thus the features of the CMB), to be discussed in a later section.

Given the similar average density of galaxies and stars over large volumes (isotrophy of the visible Universe), any long-travelled photon will be subjected to a similar (but not exact), amount of path bending.

There is no cosmic expansion.

As such, Hubble's law should be called Hubble's correlation. That is, the correlation between cosmological redshift (cumulative turns),...and distance.

There is no cosmological blueshift because a photon can only go straight (no redshift) or it can bend (redshift), relative to the ideal vacuum.

This is because the lower-bound of content in a volume of space is zero content; there is no such thing as negative content, and thus there is no anti-bending.

Evidence for this model of cosmological redshift (accumulated photon bending) comes from observing distant supernovae. The time dilation effect of supernovae is due to the accumulation of photon path bending, with farther sources having accumulated more turns and thus traveling a longer distance.

As an analogy, compare the range of arrival times of several cars that have left one house at the same time to arrive at another house within the same neighborhood, versus the range of arrival times between several cars that have left one house in Los Angeles (at the same time) to arrive much later at a home in New York City.

There would be a wider range of arrival times in the second case, as slightly different paths, red vs green lights, and traffic densities would increase the range of outcomes of trip duration.

With supernovae, the later-arriving light that has propagated through more turns will be more red, and a more distant object will appear larger, as the range of photon trajectories can only increase versus the single trajectory of no path bending.

Note that these effects on observed light are due to photon path bending/lensing, and not due to scattering.

A photon can experience both gravitational blueshift and cosmological redshift at the same time, if the photon is propagating from outer space, down towards the surface of a planet at an angle, rather than with a perfectly vertical trajectory, such as with the elevator shaft in the Pound-Rebka experiment.

A photon can also experience gravitational redshift and cosmological redshift at the same time, such as when light leaves the surface of the Earth at an angle, towards higher altitudes, with a bending path.

In the case where a photon is passing by a star, it will undergo cosmological redshift the entire time its path is bending, while it first experiences gravitational blueshift as it gets closer to the star, and then experiences gravitational redshift as it leaves the vicinity of the star.

To be clear, although the gravitational blueshift and gravitational redshift components may net out to zero, a photon will still experience a small net redshift from the path-bending component (which is due to the photon not traveling in a straight line trajectory relative to the ideal vacuum).

Dark Energy
(the accelerated decrease in the size of the polar circle relative to the angle of change of the biaxial declination, as the cosmological redshift approaches the collapse of the wavefunction)

Dark energy is not due to the accelerated expansion of the Universe long ago,...near the beginning of time itself.

[The Universe is temporally infinite and not expanding.]

Rather, dark energy is a plug used to explain the apparent acceleration of cosmological redshift at farther and farther distances.

The question is, "Why does cosmological redshift appear to accelerate?"

The answer is not due to cosmological expansion, and not due to a Doppler effect.

Essentially, a red photon will undergo more cosmological redshift than will a blue photon, when propagating through an identical asymmetry of the singlet density field, and the more red the photon, the more significant the difference.

We must instead look to the underlying geometry of a fundamental particle's biaxial declination, and compare what happens when a blue photon redshifts and when a red photon redshifts.

I want to emphasize here that the red photon will not bend more than the blue photon! Both photons will bend around a gravitational mass by the same magnitude, which is a function of the singlet density field.

The difference is that when they both come out of the path bending (along the same trajectory), the tangential speed of a red-photon's tumbling magnetic moment will have decreased much more than the decrease in the tangential speed of the tumbling magnetic moment of a blue-photon.

This loss of momentum is due to the spherical shape of the fundamental particle, as explained below.

Specifically, during a redshift, we must compare:
the displacement of the polar circle along the edge (circumference) of the fundamental particle, with the change in the size of the polar circle (as measured by the radius of the polar circle).

Let us consider the shape of the sphere, and compare two equal lengths of arc (in blue, below) along the circumference, as the declination decreases during a redshift.

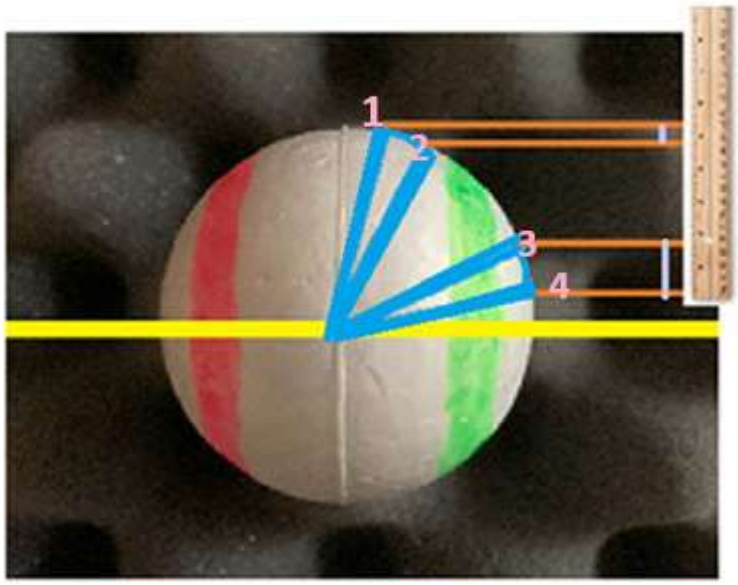


Figure 54

We can see that for gamma light, a small change in the declination (1 --> 2), does not change the size (i.e. radius) of the polar circle very much,

while for radiowave light, there is a more drastic decrease in the size of the polar circle as it approaches zero declination (3 --> 4).

Note that the radius of the polar circle is measured (using the ruler, above) from the horizontal yellow, vertically to the edge of the particle sphere.

Note that because the arc changes (blue) are the same size, both photons would undergo the same amount of path-bending.

The Cosmic Microwave Background Radiation

Paradoxically, the accelerating redshift of dark energy is not something that happens very far away (near the CMB), but rather, becomes much more significant very close to the observer (on Earth for example), at the end of the photon's long journey,...after propagating through many different singlet density field asymmetries.

In other words, the last mile of the photon that we observe, including the dynamics of the photon reaching the Milky Way, the solar system, and finally, the Earth's atmosphere, map to the so called features of "the immediate aftermath of the Big Bang".

When we look up at distant stars, we are not looking back in time, but rather, looking at the long-travelled photon, now, in the present time.

A photon emitted near to us (as the observer on Earth) is not correlated with much path bending.
A photon emitted much farther out is likely to have taken many more turns during its journey.

A photon emitted from beyond the cosmic microwave background (CMB), will redshift to such a degree that the declination becomes zero, it will lose its axis of propagation, the angular velocity will be zero, and it will stop propagating.

A photon emitted from beyond the CMB will never reach the observer.
I am calling this process, "redshifting-out".

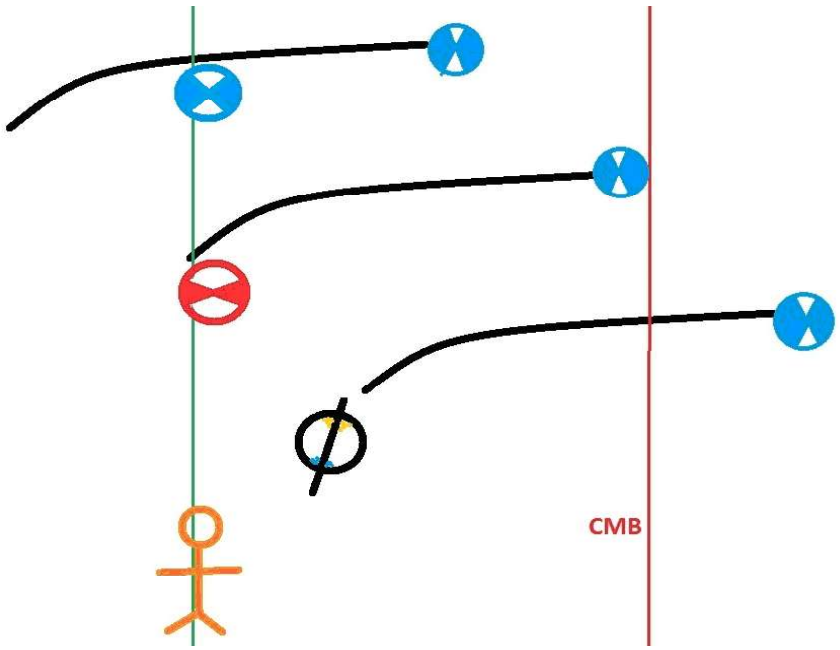


Figure 55

A photon-singlet that stops propagating, becomes the electron-positron form of the singlet again,...sort of the reverse of electron-positron annihilation in that it loses the second axis instead of gaining a second axis.

A photon-singlet from beyond the CMB will thus redshift-out,…stop propagating, and become a singlet of the interstellar/ intergalactic medium...it will become a part of the singlet density field of spacetime.

The CMB is basically telling us that on average, the highest possible frequency gamma photon will redshift-out after ~13.8 billion years of cumulative photon path bending, given the average triplet and singlet density content in the Universe.

The anisotrophy of the CMB, is thus due to nonhomogenous singlet density fields throughout the Universe.

The Hubble tension is due to non-homogenous singlet density fields through which photons can propagate, and not due to a changing cosmological constant.

The Electromagnetic Spectrum

The electromagnetic spectrum of the fundamental particle thus extends from:
gamma ray > x-ray > ultraviolet > visible light > infrared > microwave > radio wave > the electron-positron form of the singlet.

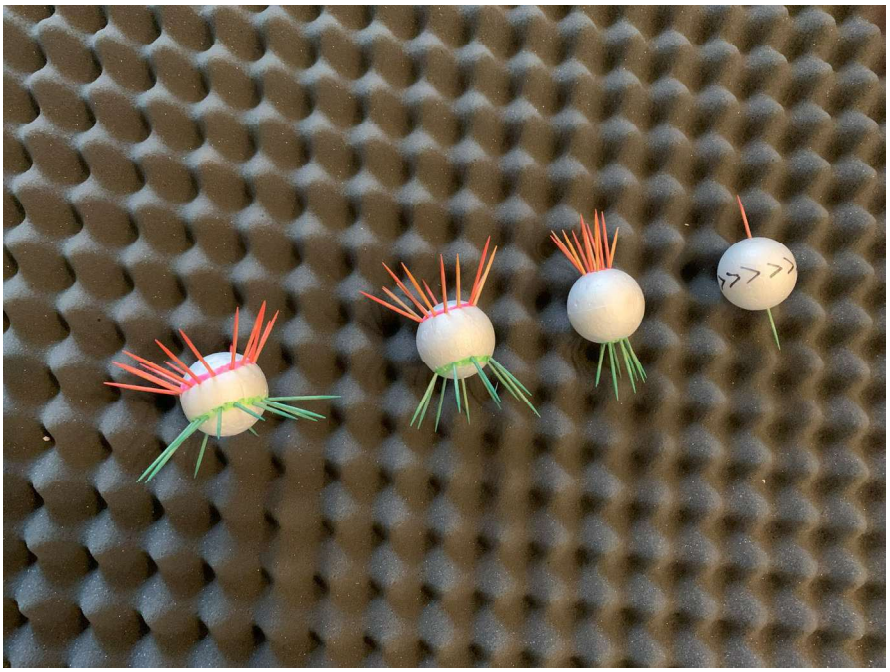


Figure 56

This is equivalent to the 90-degree range of possible declinations of the photon-quadrant, with the photon-singlet propagating with two axes, and redshifting towards zero declination, and thus one axis in the electron-positron-form of the singlet.

[Note that cosmological redshift contributes to Olber's paradox; why the nighttime sky is dark. Photons redshift-out to become non-propagating singlets, rather than propagating forever.]

[Note that cosmological redshift has negative implications regarding using radiowaves for intergalactic communication. Very distant aliens won't receive our radiowave signals which will redshift-out and stop propagating, much quicker than would gamma ray communication signals.

Of course gamma-ray photons are more likely to interact with singlets due to their steep biaxial declination, so there is a tradeoff in terms of photon declination chosen for long-distance communication.]

Doppler Redshift and Blueshift
(a change in magnetic moment angular velocity)

When the photon emitter is moving towards a detecting observer, the movement of the emitter has zero effect on the speed of light (the linear propagation through spacetime density).

[The speed of light, of course, is a function of the permeability and permittivity of the singlet density field.]

However, there will be an increase in the angular velocity of the tumbling magnetic moments.

The movement of the emitter changes the complex spin, but has no affect on the linear propagation component.

Likewise, when the detecting observer is moving towards the emitted photon, there is no detected change in the speed of light, but the reception of the complex biaxial spin will show an effective increase in the angular velocity of the tumbling magnetic moments.

When the emitter moves away from the observer, there will be a decrease in the angular velocity of the tumbling magnetic moments.

When the observer moves away from the emitter, the reception of the complex biaxial spin will show an effective decrease in the angular velocity of the tumbling magnetic moments.

Quantum Gravity

According to Newton, the mass of the Earth and the mass of the Moon are attracted to each other through the force of gravitation. Newton focused on mass versus mass.

Wheeler summarized Einstein's general relativity as, "matter tells spacetime how to curve, and spacetime tells matter how to move". Einstein focused on mass versus energy (density).

Part of the solution to quantum gravity can be roughly translated as, "triplets tell the singlet density field how to curve, and the singlet density field tells triplets how to move".

To complete our understanding, we must break down gravitation into its components, with a focus on individual fundamental particles, composite particles, and with respect to dynamic particle spin orientation relative to a frame of reference, as well as dynamic particle declination.

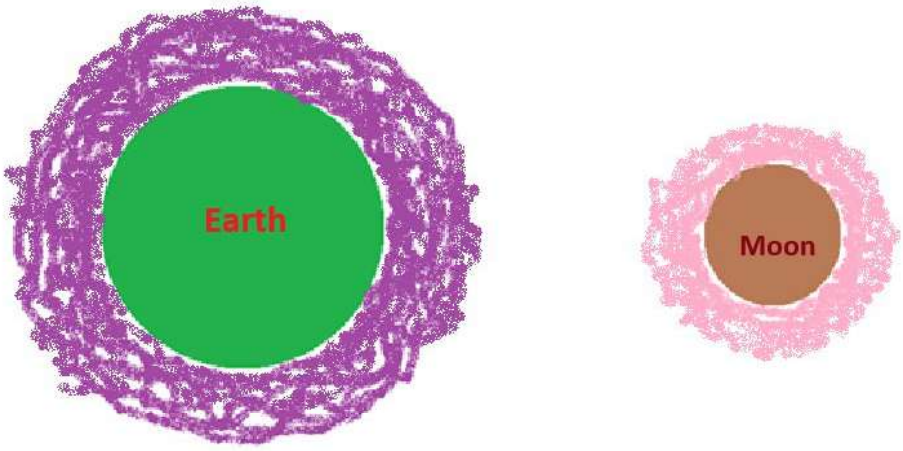


Figure 57

The complete solution to quantum gravity consists of multiple components, based on the Theory of the Classical Biaxial Fundamental Particle:

The Triplets of the Moon are attracted to the Singlet Density Field of the Earth
(Inside + Clockwise); and (Outside + Counter-Clockwise).
The Triplets of the Earth are attracted to the Singlet Density Field of the Moon
(Inside + Clockwise); and (Outside + Counter-Clockwise).

The Triplets of the Earth are attracted to the Singlet Density Field of the Earth
(Inside + Clockwise); and (Outside + Counter-Clockwise).
The Triplets of the Moon are attracted to the Singlet Density Field of the Moon
(Inside + Clockwise); and (Outside + Counter-Clockwise).

And importantly,…there are four more components...
The Singlet Density Field of the Earth repels the Singlet Density Field of the Moon
for equators oriented in the same direction (left + left), which is the same as (right + right).
The Singlet Density Field of the Earth attracts the Singlet Density Field of the Moon
for equators oriented in opposite directions (both Inward), which is the same as (both Outward).

The Singlet Density Field of the Earth repels the Singlet Density Field of the Moon
for like poles (Clockwise vs Clockwise); and (Counter-Clockwise vs Counter-Clockwise).
The Singlet Density Field of the Earth attracts the Singlet Density Field of the Moon
for opposite poles (Clockwise vs Counter-Clockwise); and (Counter-Clockwise vs Clockwise).

Note that for two celestial bodies with electromagnetic fields that have their clockwise poles oriented in the same direction, the adjacent singlets would generally have equatorial planes that are repulsive,...similar to the case of two wires with electric currents going in the same direction.

In other words, two celestial bodies with their North Poles in the same direction, will repel each other.

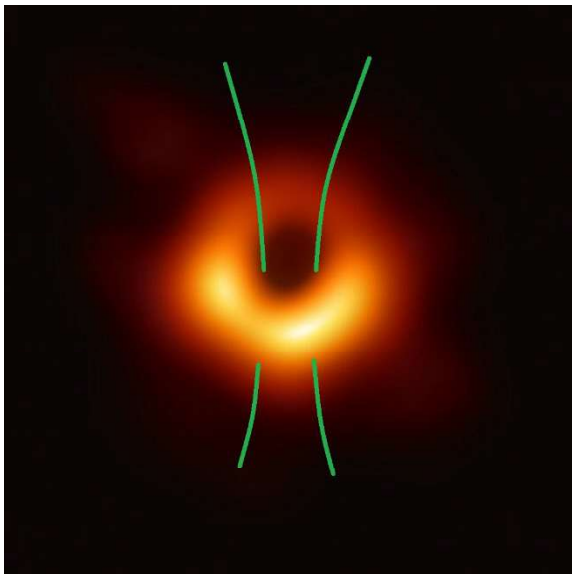
The Black Hole --> The Galactic Center

We need to reinterpret the black hole in order to understand the physics of the "galactic center".

The galactic center is not a dense sphere of triplets (massive protons and neutrons), as envisioned by Schwarzschild.

As such, structures such as the event horizon and singularity, and concepts such as Hawking radiation, may need to be modified or discarded.

Rather, the galactic center consists of an extremely dense, disk-like singlet density field, surrounded by a "ring of stars";...a ring of repulsion. This does not have to be a perfect geometric ring of stars, it only needs to be a very dense region of stars.



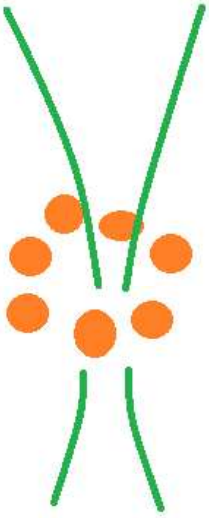


Figure 58 (original image source: Wikipedia)

The stars that comprise the ring of stars are simultaneously attracted to (triplet vs singlet), and repelled-from (singlet vs singlet), each other.

Stars from the edge of the galactic disk move-in towards the galactic center over time, and push the more-inward stars towards the center. All of the galactic stars are then moving towards the galactic center and crushing the innermost stars together.

Then, the repulsion from the tightly packed ring of stars creates the out-flowing symmetrical vortices of the galactic jets.

The matter in the galactic center, squeezed inward from the galactic edge, has nowhere else to escape, except orthogonally,...both down and up through the vortices, and the result is an active galactic nucleus (AGN).

Falling in to a "Black Hole"

If a star from the ring of stars, or any other matter or energy content (triplets or singlets) gets pushed in to the galactic center from the galactic plane, it will get compressed into the element with the highest atomic weight found naturally in the Universe; uranium-238.

The galaxy is a giant fusion machine,…though, as we saw from the corrected nuclear decay equations, fusion is not creating new fundamental particles. The galactic center is simply tightly-packing fundamental particles into densely-packed triplets, in the structure of uranium-238.

Importantly, galactic fusion is an important recycling mechanism of the Universe, needed to prevent all matter from decaying into a sea of individual singlets, during the infinity of time in a non-expanding Universe.

One could argue that the Universe lowers entropy by means of galactic centers.

With gravitational attraction and repulsion, and with galactic fusion and stellar decay, the cosmological constant is reinterpreted, or is no longer necessary.

Galactic Structure: The Double-Torus Quadrupole

The fused uranium-238 matter in the galactic center is ejected from the two galactic jets, and can then wander away deep into the Universe, or it can get pulled back around towards the galactic plane (as part of the galactic halo), before cycling inward to the galactic center again.

The structure of the mature galaxy is the double-torus, two tori, with one torus stacked on top of the other, both spinning in the same direction as the galactic spiral,...which forms a quadrupole.

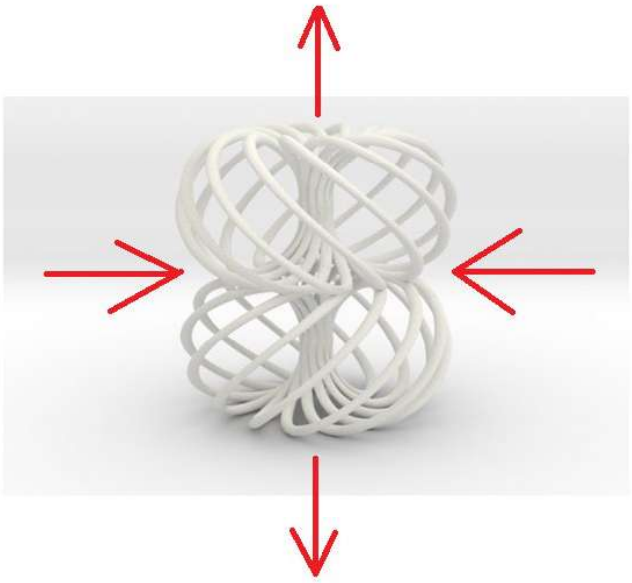


Figure 59 (original image source: images1.sw-cdn.net/)

The galactic halo encompasses both tori, while the traditionally observed swirling arms of the galactic plane, lie sandwiched between the two tori.

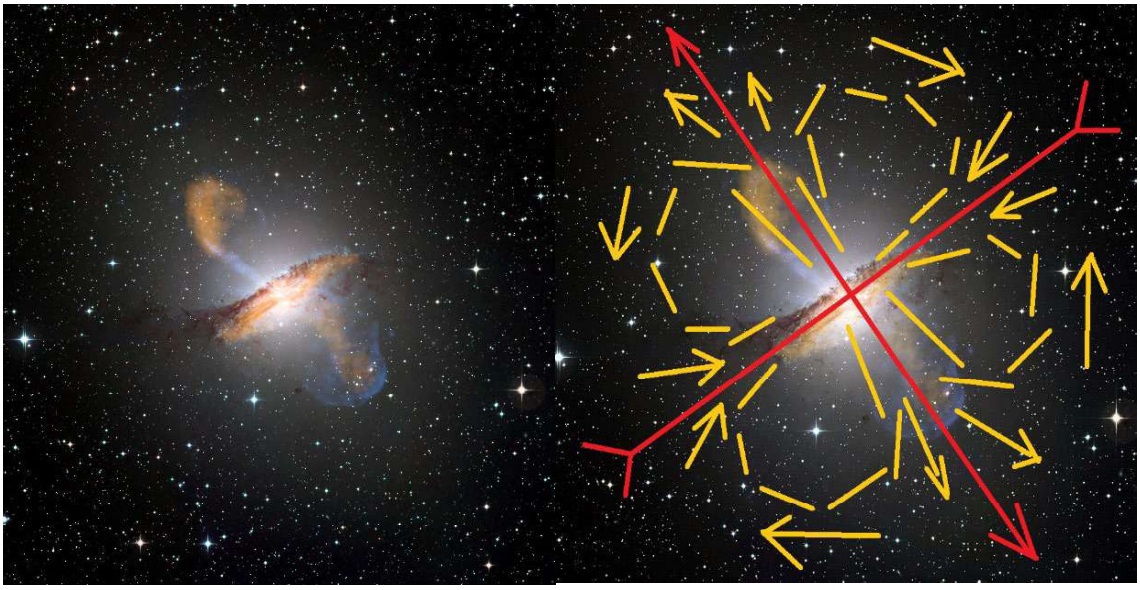


Figure 60 (original image source: Wikipedia)

The Star Lifecycle

Uranium-238 is fused in the galactic center and, like a garden hose, is ejected from the tornado-like twisting vortices of the galactic jets. The ejected uranium-nebulae has angular momentum, and forms separate uranium-spheres,…which are proto-stars, and are not yet shining.
Over time, the uranium-spheres decay into lead-206.

The great abundance of helium in the Universe, is in great part due to the decay chain of uranium-238 to lead-206.
The byproducts, include helium-4 (through alpha decay), and singlets (through beta decay).

Due to this decay chain, a proto-star will come to have a very dense singlet density field surrounding it.

At a critical ratio of singlet field density to helium, the uranium-sphere proto-star will supernova, which is a star birth event, and not a star death event.

The star will begin shining, powered by the chemical reaction of helium converting into hydrogen, under the enormous pressure of a very dense singlet density field.

Helium will break apart into hydrogen triplets, and release singlets that were holding triplets together. The star will lose mass over time.

In the dense singlet density field, singlets will bump into other singlets at their equators and "electron positron annihilation" will result in photon propagation (radiation).

The newborn star will be hot and blue.

As more and more proto-stars supernovae, the uranium-nebulae ejecta will evolve, to be observed as a starburst region.

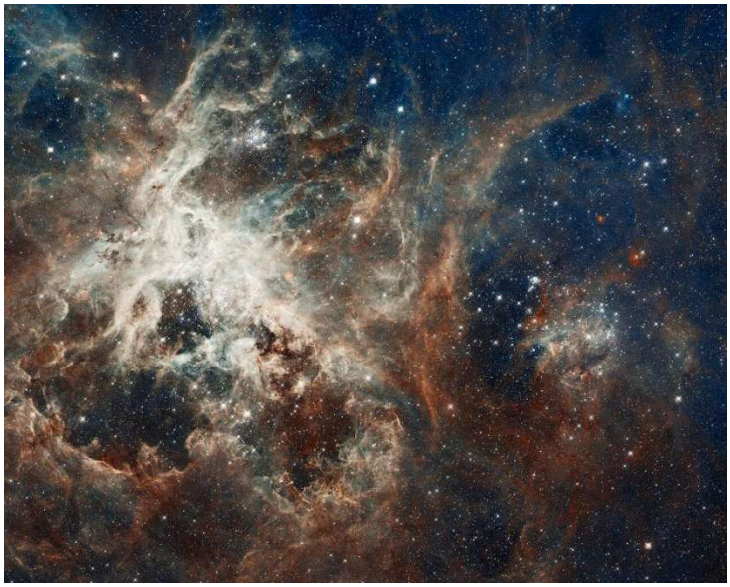


Figure 61 (source: Wikipedia)

[Note: Because helium converts into hydrogen, rather than hydrogen fusing into heavier elements (metals), that there is no longer a cosmological lithium discrepancy.]

[Note: The Sun's corona is hotter than the surface of the Sun, because the corona is the location of helium breaking apart into hydrogen.]

A Framework for Dark Matter

Galactic rotation curves (in the galactic plane) must take into account:

-the attraction between triplets and the singlet density field;
-the repulsion of adjacent singlet density fields;
-the dense uranium-ejecta that forms uranium-nebulae; and then
-uranium-spheres (massive triplets not well-detected); and
-the double-torus structure of the galaxy and the quadrupole;
-with matter and energy in the galactic halo moving down towards the galactic plane; and then
-with the matter and energy at the edge of the galactic plane pushing galactic content (matter and energy) towards the galactic center.

The Bullet Cluster

I contend that the Bullet Cluster is not caused by a merger of two galaxies, but is actually a single galaxy, looking head-on to the larger of the two galactic jets. The dark matter halo is caused by the singlets and triplets released from the jets, flowing away from the galactic center.

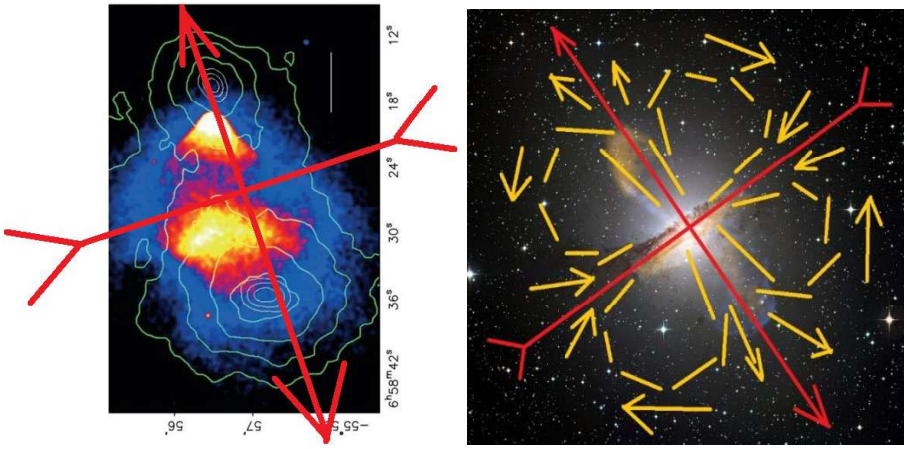


Figure 62 (original image source: https://ned.ipac.caltech.edu/level5/Sept16/Bertone/Bertone7.html; Wikipedia)

Galactic Formation and Evolution

Over time, newborn stars from the uranium nebulae/ starburst region will form a bright blue globular cluster. With evolving and dynamic densities of the newborn stars' singlet density fields, globular cluster stars will attract and repel each other, dart around each other, and stable orbits can not yet form.

Over time, as the stars' singlet density fields evolve, the stars in the globular cluster will organize into a lenticular galaxy, and then a mature spiral galaxy, due to attraction and repulsion dynamics, and the movement of stars towards the galactic center.

Globular Cluster > Lenticular Galaxy > Mature Spiral Galaxy

Figure 63 (source: Wikipedia)

When the galaxy matures, the outer stars will be pushing the inner stars closer together, until they repel to form the galactic center's ring of stars, and the oppositely-protruding symmetrical vortices. The quadrupole is thus formed.

The Star Lifecycle Extended: Planetary Evolution

Post-supernova, the young star will burn hot and bright blue.

As the star cools, the star's color will change from blue to white to yellow to orange to red to brown.

The Hertzsprung-Russell diagram's main sequence becomes much more elegant and intuitive, and can now be extended.

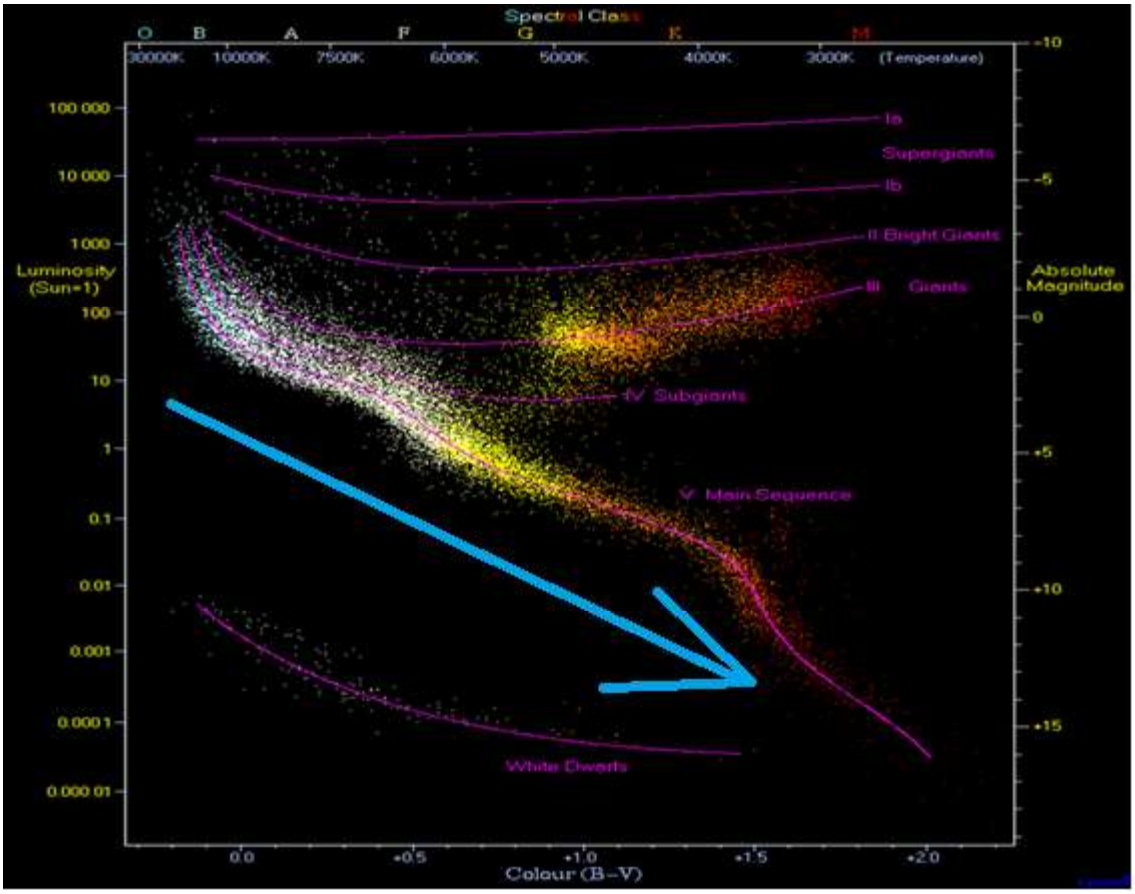


Figure 64 (original image source: Wikipedia)

Note that cosmological redshift (i.e. photon path bending) will cause distant starlight that passes through dense asymmetrical singlet density fields, to look redder, larger, and more massive. For example, compare a red supergiant star vs a Wolf-Rayet star.

Additionally, differences in the density of the singlet density field can change the inputs that affect calculations of distance, which may have ramifications for the cosmic distance ladder as well as the Hubble tension.

Metaphorically, the star then turns from brown to black.

The singlet density field is no longer strong enough to break down helium into hydrogen. At this later stage of decay, the star will no longer be shining in visible light, but will continue in the infrared.

It will still be hot, but smaller than a star;…a hot Jupiter gas giant planet,...with a relatively large atmosphere.

Over time, every gas giant planet, which has a uranium-238 core, will decay and chemically evolve, and the atmosphere will shrink in size,...to eventually become a rocky planet,...like Venus, with strong subterranean geologic activity continuing internally.

The Venus-like rocky planet continues to evolve,...to eventually become Earth-like.

All rocky planets have uranium inner cores decaying into lead.

Notice that Venus-like comes before Earth-like, and not after Earth-like.
Venus' atmosphere is not due to a runaway greenhouse effect that the Earth is supposedly heading for. We will see shortly that it may instead be due (in part) to biological processes.

Mars, Mercury, and the Moon are more depleted stars, further along in their respective lifecycles, with relatively little uranium decay left.

Eventually, all celestial bodies will lose their singlet density field and thus, their protective ability to repel other singlet density fields, through singlet-singlet repulsion.

Over time, they will orbit other celestial bodies at shorter and shorter distances. These dying planets and moons eventually collide, fragmenting into asteroids, comets, and dispersing into planetary rings and asteroid belts.

No matter a star, planet, moon, or rocky fragment,...eventually, all matter will end up in another galactic center in order to be compressed into uranium-238, and ejected again from a galactic jet, to begin to decay again in an eternal cycle.

Such is the recycling mechanism of the infinite, and non-expanding Universe.

Due to interdependent paradigm shifts, we needed the insight of the infinite age of the Universe in order to realize that stars evolve into planets and moons over trillions of years or more.

The Star Lifecycle: Sun > Jupiter> Venus > Earth > Mars > Mercury

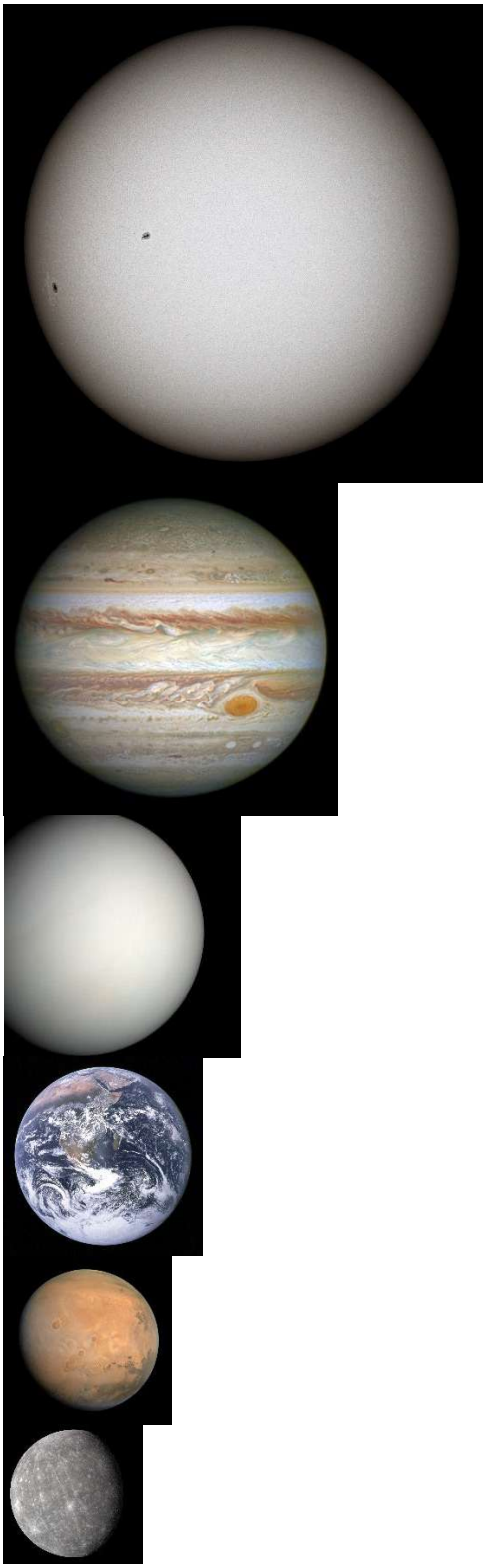


Figure 65 (source: Wikipedia)

The Evolution of Biochemistries

Having made multiple paradigm shifts as part of the solution to the theory of everything, including that the Universe is infinite and eternal, and that the star lifecycle is a function of the radioactive decay of uranium, we can finally propose and realize that the life on the surface of the Earth evolved from life below the surface of the Earth.

There is life, deep inside the Earth,…within and below the Earth's mantle,…and all the way down to the Earth's core.

The life in the core of the Earth has a biochemistry that is likely iron-sulfur-based, which over trillions of years or more, mutated and adapted, and expanded upwards and outward, evolving into the silicon-based biochemistry that lived and lives in the mantle of the Earth, which over many years, evolved and ascended, into the carbon-based biochemistry that lives in the crust and on the surface of the Earth.

There may have been multiple intermediary steps in-between as well, enabling the myriad chemical compounds that we find in the Earth's interior.

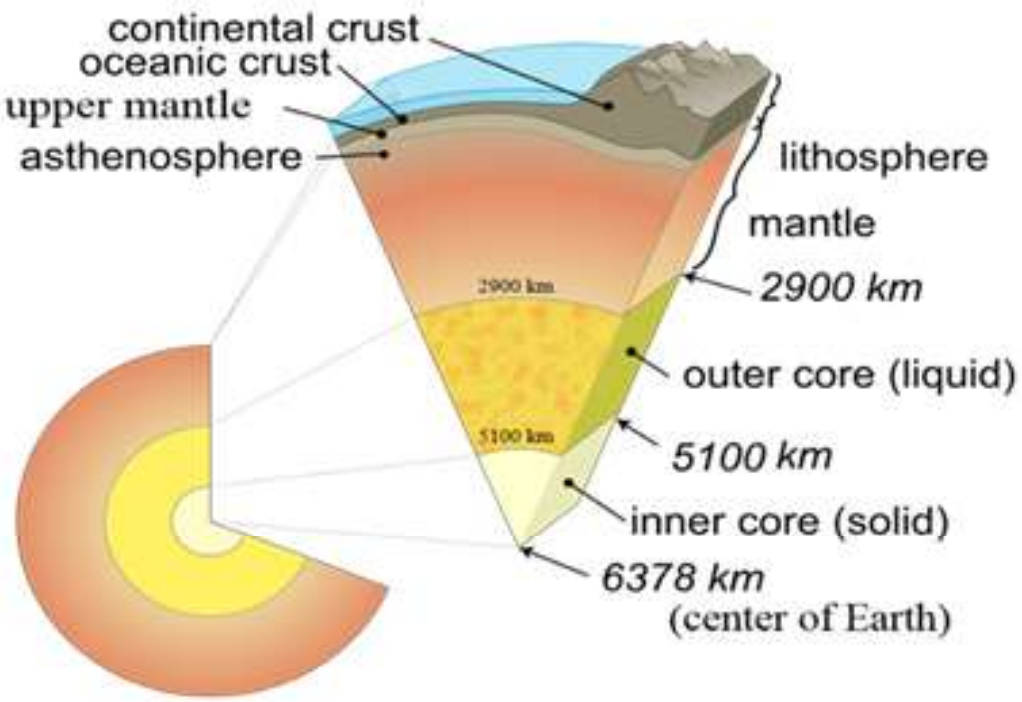


Figure 66 (source: Wikipedia)

Evidence for Subsurface Life

Humans and other lifeforms have an iron-sulfur protein that is important for core life functions (found/used in: mitochondria, oxidation, ATP, metabolic activity).

It is logical to infer that certain ancient biological structures such as an iron-sulfur molecule could be carried through evolving biochemistries over trillions of years or more.

Bacteria and archaea (RNA-based), are lifeforms on the surface of the Earth that may link to our ancient ancestors, as they can survive harsh temperature and pressure conditions, and use varied energy sources besides sunlight, such as carbon sugars, ammonia, metal ions, and hydrogen gas.

Anoxygenic purple bacteria, found in ancient microbial mats (3.5+ billion years old), are anaerobic sulfate reducing/methane emitting bacteria in H_2S environments.

Purple bacteria likely evolved before the ancient oxygenizing blue-green cyanobacteria.

Sulfur-eating bacteria are found in hydrothermal vents.

Oil, which often contains sulfur, likely comes from subterranean lifeforms, rather than from the decayed remains of surface life that was buried over time.

Current theories for the formation of oil have hypothesized the burial of earlier, surface-based life, or an abiogenic origin underground,...both of which are incorrect.

Olivine (Fe_2SiO_4), often found in volcanic magma, may be the remains of an earlier transitional biochemistry, as it contains both Fe and Si.

Olivine has also been found on the Moon, Mars, and in asteroids and meteorites, and thus, provides evidence for extraterrestrial life in the Universe!

Evidence for silicon-based life can be found in: sponge spicules, diatoms, and radiolarians.

Siliceous sponges have been found below hydrothermal vents, again connecting to our past since deeper is correlated with more ancient.

Diatoms have a cell wall made of silica, generate oxygen, and are a type of plankton, partially responsible for the great food chains of the Earth.

Interestingly, iron minerals are the foundation of the plankton diet.

Other evidence for silicon-based life can be found in abundant rocks and minerals such as granite, quartz, feldspar, and mica.

Perhaps these abundant rocks represent ancient abundant life that could not survive the changing environmental conditions as the Earth evolved.

Geological activity, such as earthquakes and volcanoes, may provide evidence of the biologic activity of subterranean life.

With biological processes, as well as natural decay processes of the chemical elements, there are many possibilities for chemical reactions, and genetic mutations, which enable the wide variety of chemical elements that are found in the various subsurface layers of planets and moons.

We can look to the compounds and minerals of the Earth, at various depths, to see which chemical elements have been found together within the same geological environment.

Chemical elements found together may be the fossilized remnants of ancient biochemistries that contained those elements, and they may hint at the evolutionary path that took place on Earth.

The compounds and minerals of the Earth (roughly), from the interior to the exterior…

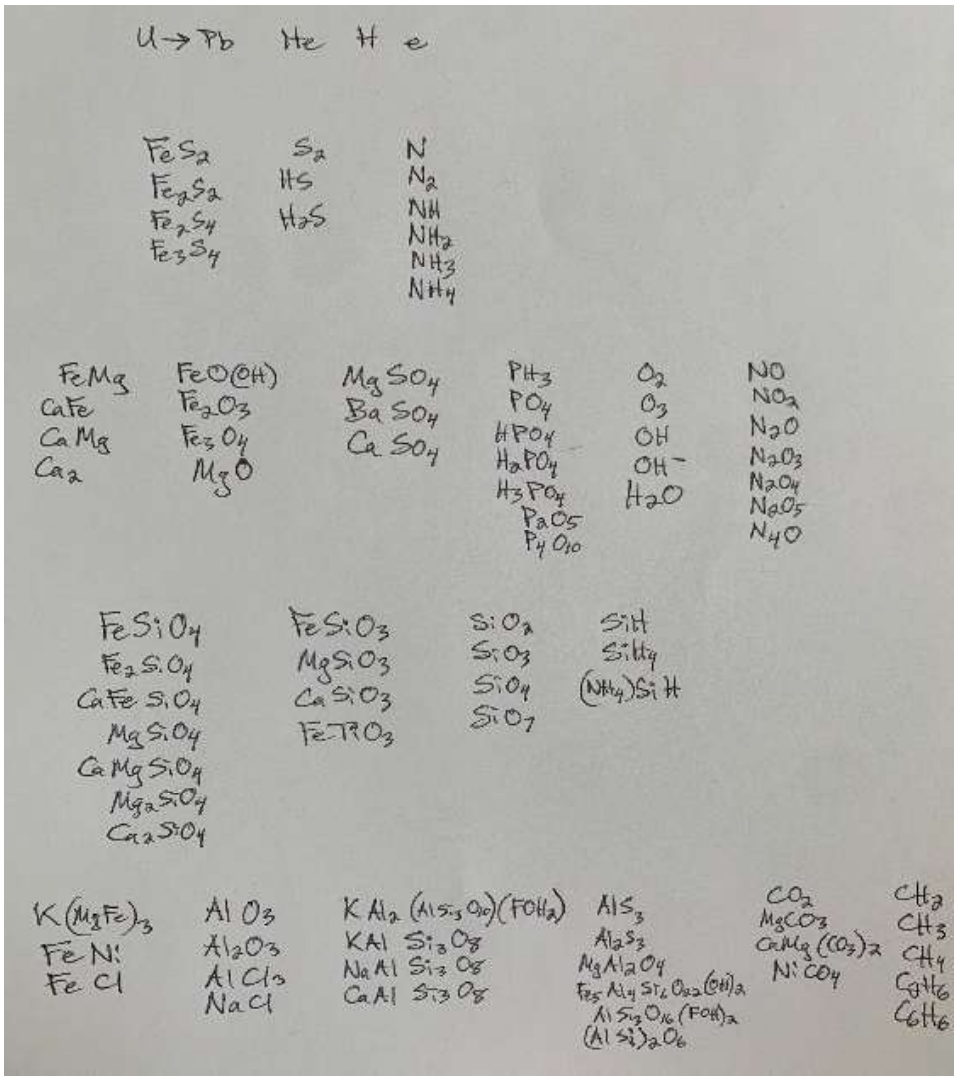


Figure 67

The "DNA" of our Ancestors, and of Extraterrestrial Lifeforms

Having corrected the stellar lifecycle, we can now begin to use the subterranean chemical associations (elements and compounds found buried together) to hypothesize specific biochemistries of our ancestors, and to hypothesize the biochemistries of extraterrestrial lifeforms, at various stages of the star lifecycle, and at various layers/depths of a star/planet/moon.

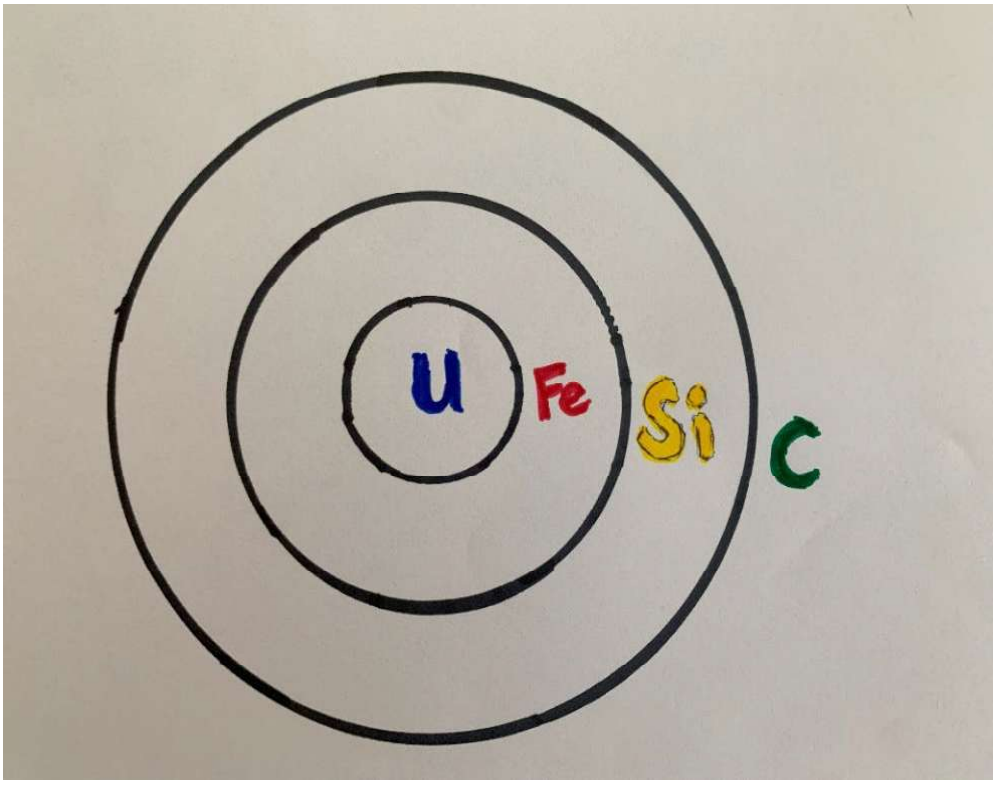


Figure 68

The core of the Earth contains uranium decaying into lead.

The life in the core of the Earth likely has a biochemistry that is iron-sulfur-based, which evolved into the silicon-based biochemistry that lived and lives in the mantle of the Earth, which evolved into the carbon-based biochemistry that lives in the crust and on the surface of the Earth.

Below, I propose a hypothetical chain of evolving biochemistries that may have taken place on Earth, whereby the biochemical backbone of DNA evolved, from RNA, and from an iron-sulfur biochemistry much earlier.

The iron-sulfur biochemistry incorporates a backbone of iron and sulfur,
which evolved to include a Mg-sulfur backbone as well.

This backbone structure was first attached to SO4,
and then evolved to attach to SiO4,
and then to PO4, which is found in both RNA and DNA.

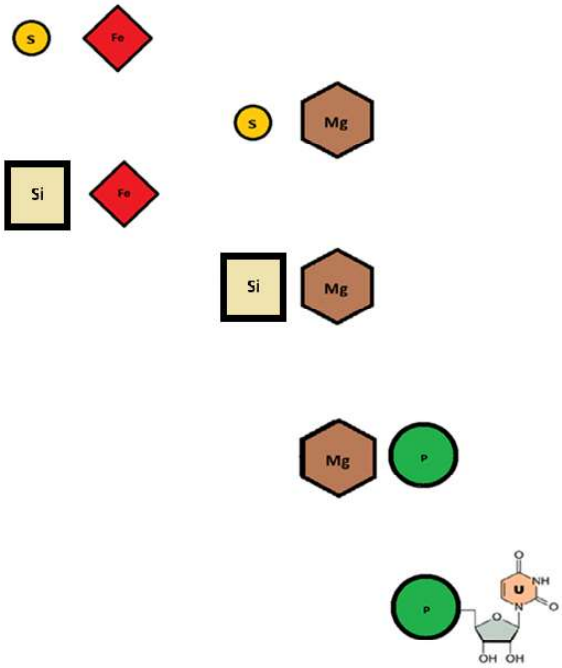


Figure 69

The last group then evolved into single-stranded RNA,
(with Uracil instead of Thymine)…

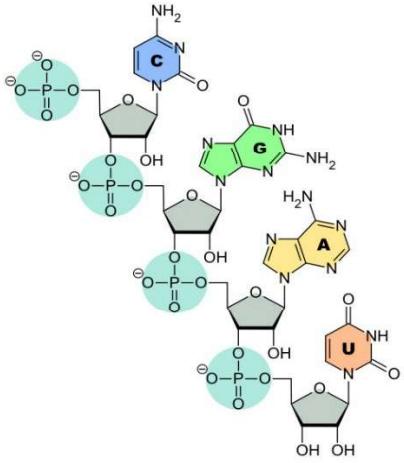


Figure 70 (source: Wikimedia)

…which evolved into double-stranded DNA.

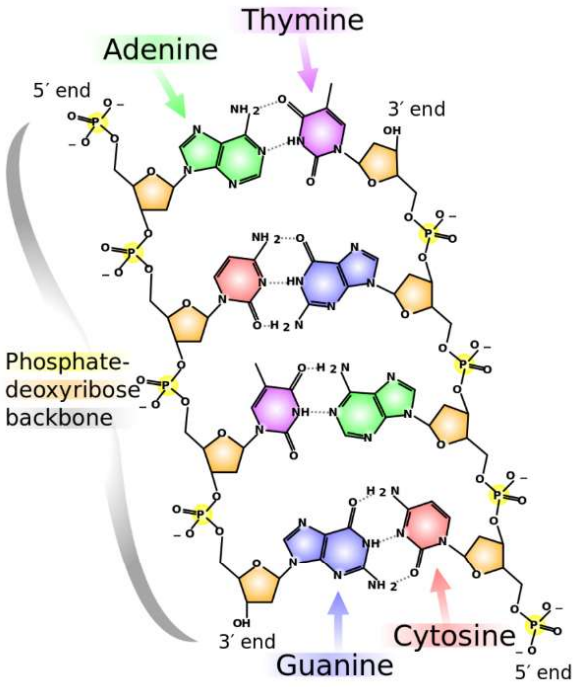


Figure 71 (source: Wikimedia)

Extrapolating from the planet Earth to other planets at various stages of the star lifecycle, we can begin to hypothesize:

-the iron-sulfur biochemistry might be found on the surface (below the atmosphere) of Jupiter;
-the silicon-based biochemistry might be found on the surface, or just below the surface, of Venus;
-perhaps the Martian blueberries found on the surface of Mars, could be related to the iron-sulfur biochemistry.

We can also hypothesize how biochemistries could become extinct by certain chemical environments. For example, perhaps a deep-Earth silicon-based biochemistry cannot penetrate upward through a layer of water or oxygen within the Earth's interior, which destroys it.

We can begin to propose how the interaction between radioactive decay and biological processes could result in the myriad elements we may find on and within the planets and moons of our solar system, and beyond to other solar systems, as well as on and within exoplanets, which of course do not require a host-star in order to contain life in the exoplanet's interior.

The re-imagined stellar lifecycle and the evolution of biochemistries combine to open many new avenues of exploration in astrobiology (and perhaps even medicine).

The Expanding (and Contracting) Earth

The composition of the Earth has been shaped in part by radioactive decay processes.
The triplet and singlet content of a star/planet are dynamic, and so different layers may expand or contract at different times.

Before ancient Pangea, Rodinia, and Nuna, the Earth was landlocked, and trenches opened and expanded, allowing water to seep through, flowing upwards from deep in the Earth's interior.

Figure 72 (original image source: @NealAdams2000)

Like the water, life also likely ascended upwards through the Earth,…through structures such as volcanoes, oceanic trenches, and hydrothermal vents, as well as through analogous transition corridors below the crust of the Earth, not visible to us.

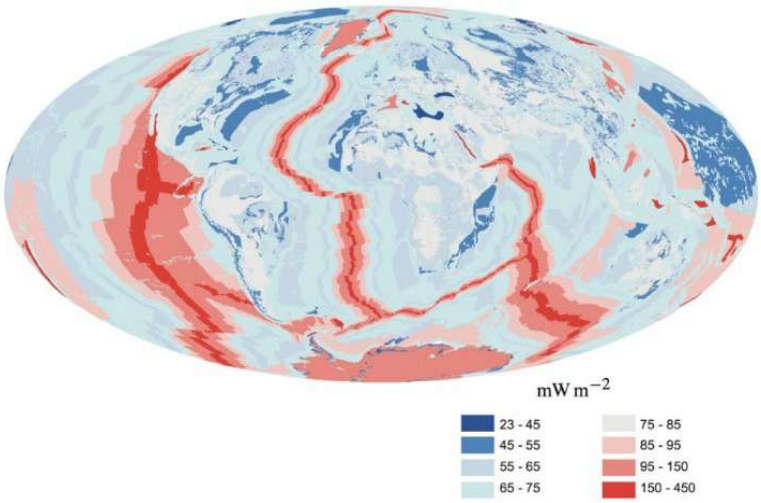


Figure 73 (source: Wikipedia)

The Origin of Water on Earth

The source of water on the surface of the Earth likely came from chemical and biologic processes below the Earth's surface, and not from comets and meteors.

Water may have come from a lifeform in the mantle or outer core of the Earth that is similar to sulfate-reducing bacteria or methane-reducing bacteria.

A lead-sulfur battery might contribute to the formation of water under the surface of planets:
$Pb(s) + PbO2(s) + (2)H2SO4(aq) \rightarrow (2)PbSO4(s) + (2)H2O(l) = 2.05V$

The Electromagnetic Field of a Planet

The electromagnetic field of a planet or star may in part have to do with the iron-sulfur life-form in the core, including this lifeform's volume and density, and perhaps even its movements (migration patterns) and reproductive patterns (including seasonality and gestation periods).

The Formation and Structure of the Moon

The Moon was not created from the Earth, although it likely came from the same batch of uranium ejecta from a galactic jet.

The Moon was once its own spherical uranium proto-star, prior to its supernova when it became a star (as did all moons and planets).

The Mare of the Moon

The Moon's mare are likely a function of the attraction of dense triplet matter, that was once relatively more fluid, attracted to the strong singlet density field of the Earth, protruding upward through the Moon's subsurface layers, and causing tidal locking with the Earth as it solidified.

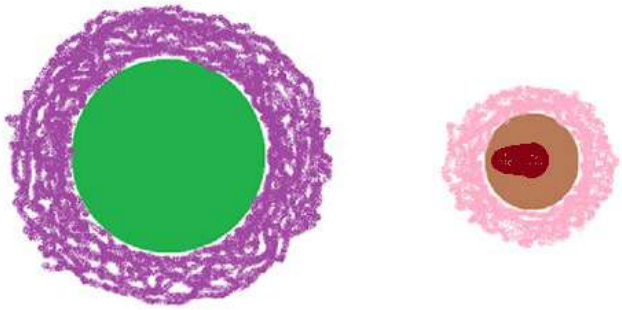


Figure 74

Fermi's Paradox: Where is Everybody?

There is likely an iron-sulfur based lifeform, that lives inside the core of every star, planet and moon.

This life may not have had enough time to reach the surface,…which requires continuously evolving biochemistries, undergoing natural selection in an ever-changing surrounding environment.

In some cases, the life may never reach the surface,…perhaps that happened on Mars and the Moon;...i.e. the sulfur biochemistry or the silicon biochemistry could not evolve further, in order to become a carbon-based biochemistry.

In other cases, life may reach the surface and then go extinct.

It is possible that post-extinction, a lifeform at a lower depth of the planet, could mutate or evolve again, into a different lifeform with a different biochemistry,...and then re-ascend, so as to repopulate the surface of the planet again with a different lifeform.

Relative to the stellar lifecycle of a trillion years or more, it is possible that lifeforms may only inhabit the surface for a few billion years, a very narrow window of time on a relative basis to the lifecycle.

This would be analogous to the Queen of the Andes plant, which blossoms for only one week when the plant reaches ninety years old,…and then subsequently dies.

The solution to Fermi's Paradox may be that a star's exterior lifeforms must die, and become the ingredients to replenish the iron-sulfur lifeform in the galactic center, ejected again and again in an eternal cycle.

Concluding Insights:

The Universe is infinite in time; it did not begin. It never went from a state of not existing, to a state of existing. Therefore, the Universe could not have been created.

The miracle of the Universe is not in its creation, but in the constant Planck spin of the eternal fundamental particle, which does not deplete an energy source...it just is.

The content of the Universe is highly dynamic, with fundamental particles gaining and losing axes, and combining to form larger composite structures,…but then also decaying,…and this happens over and over again for eternity.

A cosmological constant may need to be reinterpreted, or is no longer necessary, because the Universe contains both attraction and repulsion, and fusion and decay, and entropy is possibly reversed in the galactic center.

Quantum symmetry is elegantly foundational to the theory of everything, by means of singlet-poles and triplet-sides.

The attraction of electrons and protons becomes the exclusive attraction of specific singlet and triplet sides.

Chance exists in the Universe due to the continuous 360-continuous degrees of possibilities for a given biaxial declination, and due to the two polar circles per particle.

Despite the Universe being infinite, there are no exact copies (i.e. dopplegangers; parallel Universes; multiverse).

There are enough variation possibilities (per volume of space) to avoid exact duplicates of large structures, as any two fundamental particles that may interact, can each arrange at any orientation in three-dimensional space, and with each particle having two axes, with each axis offering 360 continuous degrees of possibilities.

There is only one field of particles in the ideal vacuum, that contains the density and orientations of all the fundamental particles that comprise it.

The specific dynamics include: singlet orientations, declinations, propagations, gyroscopic precessions, and atomic orbital paths,...as well as triplet orientations, rotations about the triplet polar axis, and propagations.

Electromagnetic charge is a polar-centric measurement, with a rigid axial alignment, relative to a frame of reference.

When a singlet's wavefunction collapses, the singlet's Planck axis aligns with an electromagnetic field.

“Mass” should be roughly defined as, "the quantity of triplets, that are attracted to the singlet density field".

One could say that the singlet density field is "that which gives triplets their mass".

Using this definition, it does not make sense to think of singlets as having “mass”.
After all, the “quantity of triplets” for just one singlet, is zero.

We must begin to look at the "electron" as a singlet; a biaxial fundamental particle,...and not as having a tiny amount of mass, but as a form of energy, containing the potential to exhibit many possible biaxial declinations (and gyroscopic precession as well).

We should ask, “What is the tangential speed of the magnetic moment going around the polar circle?”

Let us consider the electron as a half-particle.
The maximum angle that a singlet could turn to align with an electromagnetic field is 180 degrees.

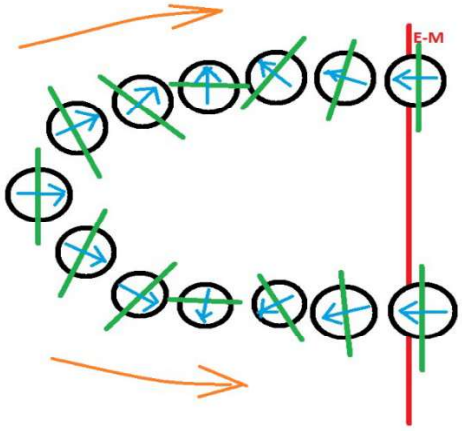


Figure 75

The mass of the electron is not measured directly. It is calculated using E=mc-squared, from the energy of a photon-singlet that comes from a photoelectric-like interaction with an electron, which undergoes at maximum, up to a 180-degree flip of the polar orientation to align with an electromagnetic field, as shown above. This means that the photon coming off of the interaction does not capture a complete 360-degree rotation of the electron, but only a 180-degree rotation (at most).

The "full rotation of the electron" is mistakenly believed to be 720-degrees.
Essentially, what scientists think is 720-degrees is really 360-degrees;
what scientists think is 360 degrees, is really 180 degrees (i.e. a half-flip); and
what they think is 180-degrees, is really just a photon-quadrant.

The structure of the fundamental particle is such that it contains both an electron magnetic moment, as well as a positron magnetic moment.
The biaxial fundamental particle has two polar circles.

Photons are massless, because the singlet poles tumble about the axis of propagation.

The biaxial declination of the singlet determines the frequency/momentum/energy,
as it determines the tangential speed of the tumbling magnetic moment, along the polar circle.

Planck poles with very little declination (small polar circles), have more structural integrity,
which make the poles better able to interact with their environment.

A singlet with one axis (and no declination), has:
-the electric field interaction along the polar alignment;
-the magnetic field interaction along the equatorial plane;
-the ability to attract, and be attracted to, a triplet; and
-the ability to interact with another singlet, which could result in an exchange of angular momentum, and a change in their respective biaxial declinations.

In an atomic orbital, a singlet with gyroscopic precession is in orbit around a triplet.

One singlet pole is attracted to one triplet-side, exclusively, satisfying the Pauli exclusion principle.

The “gravitational force” is due in part to:
-the attraction between a singlet's clockwise pole vs. the triplet's inside pole; and
-the attraction between a singlet's counter-clockwise pole vs the triplet's outside pole.

This is the only way to make gravity “always attractive” without using monopoles, while eliminating the matter-antimatter asymmetry problem.

Repelling singlet density fields can keep triplet matter separated, including celestial bodies.

The neutrino, the weak force, and the virtual W-minus boson, are plugs for incorrect, unbalanced nuclear decay equations.

Stellar nucleosynthesis is impossible because the nuclear decay equations do not balance. For example, in the first step of the proton-proton chain reaction, two protons supposedly fuse into deuterium. One proton undergoes beta-plus decay, whereby: a proton (3 singlets) converts into a neutron (4 singlets) by emitting a positron (1 singlet?), and emitting an electron-neutrino (1 singlet?). For stellar nucleosynthesis to work, you have to believe that 3 singlets could somehow get converted into 6 singlets,...but we know that matter (fundamental particles) cannot be created nor destroyed. There are problems with other parts of the CNO Cycle as well.

In terms of the relative ages of the celestial bodies in the Solar System, the Sun is the youngest, and the next youngest is Jupiter.

We can explore new questions. For example, consider a hypothetical time before the Sun arrived in the Solar System, when all of the major planets orbited a hot Jupiter. If this was the case, one could envision the planets leaving Jupiter's orbit, and shifting their orbit to the more massive Sun (higher singlet density field relative to Jupiter's), when the Sun came in to the vicinity of the proto-Solar Jovian System.

The time between the Earth moving from Jupiter's orbit to the Sun's orbit could have caused an ice age on Earth, given the drop in temperature during the orbital relocation process.

Climate change on Earth and for every star is inevitable. Before the Sun stops shining as a star, the Earth is likely to see less and less uranium decay, and will lose its atmosphere, and will lose its protective singlet density field, that can hold back and deflect other large celestial bodies.

All life on the surface of the Earth has ancestors that lived (and likely still lives) below the surface of the Earth. There is, likely, life inside every planet, moon, and star. Life never needed a Goldilocks-like planet, within the habitable-zone distance from its Sun-like star. Carl Sagan warned about "carbon chauvinism".

Life, which was previously believed to have been perhaps just a one in 7x10^20 chance (taking in to account the estimated total number of planets), and a zero chance inside of the estimated 200 sextillion total number of stars, will now have to be remodeled to perhaps as much as one-hundred percent of those same celestial bodies.

In addition, given the infinite Universe, there should be myriad stars beyond a distance of 14 billion years.

What an amazing paradigm shift in terms of orders of magnitude!

The iron-sulfur lifeform is likely present in the galactic center, and is infused with the uranium-ejecta from the galactic jets, such that the life is already a part of the uranium-sphere proto-star, before its supernova when it begins to shine as a star.

In this way, life doesn't need to miraculously "begin" on the surface of a planet. It only needs to evolve, and reproduce.

Each time matter falls in to the galactic center, any iron-sulfur life that it contains will get a newly replenished supply of food/energy in the form of decaying dense triplet matter. As such, iron lifeforms can likely survive complete trips around the galaxy, enabling life to continue for infinite time in an eternal, non-expanding Universe.

We tend to think that human beings are the dominant form of intelligent life in the Universe.
I believe that we need to consider that all life is intelligent, including plants, animals, bacteria, archaea, fungi, individual cells, cellular structures (i.e. mitochondria), and even viruses.

Given our new perspective on life, we may now recognize that the most dominant form of life in the Universe is the most abundant form of life in the Universe...the iron-sulfur biochemistry that lives inside every star, planet, and moon.

A star is like an egg, or a seed. Star "shining" is the protective shell, and then the star later blossoms as a planet in its later stages, and life hatches from inside the star.
The nighttime sky shows an infinite nursery filled with unhatched eggs.

Are we alone in the Universe? With the solution to the theory of everything,...the question is now absurd! Life is everywhere...

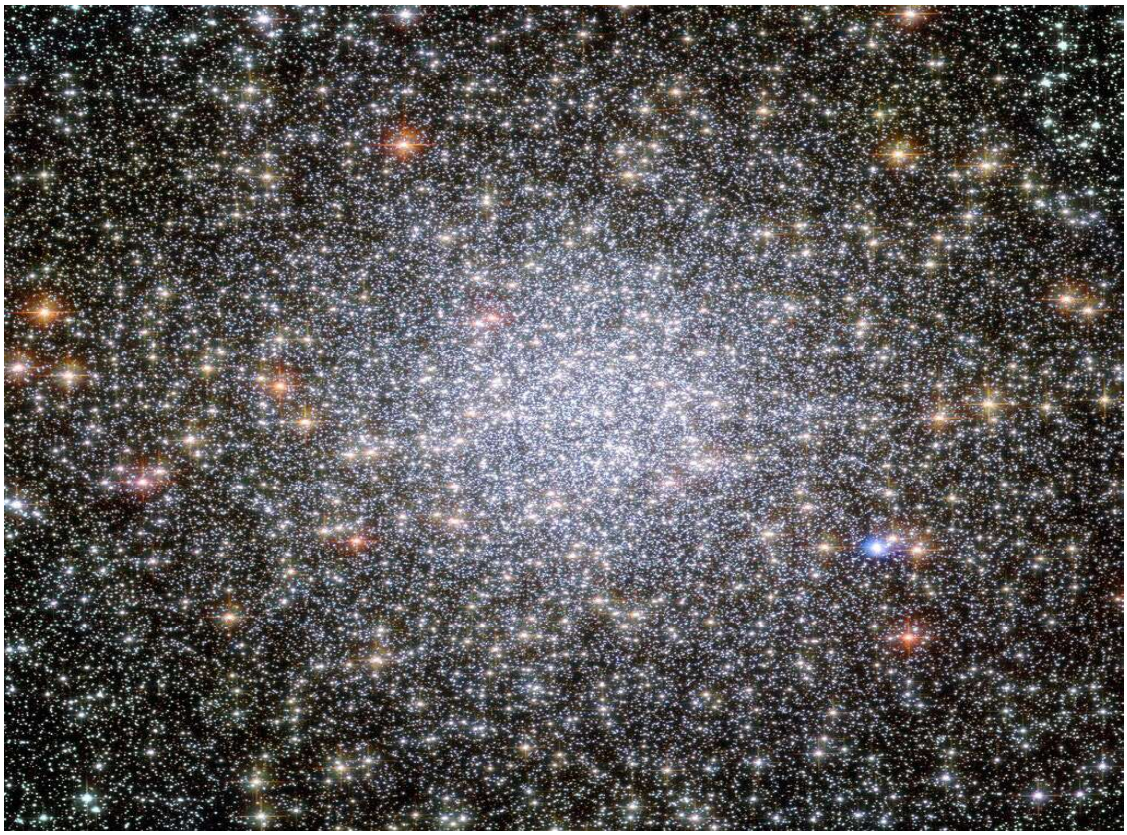


Figure 76 (source: Wikipedia)

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Adam R Gallina

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