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An Alternative Perspective to Our Understanding of Space and Planck's Quanta

"…A "Fusion" of the Wave and Particle Concepts"[1]

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I first began to start putting together the thoughts written here in 2015. Recently, I came across the book Einstein and the Quantum by A. Douglas Stone on the history of quantum mechanics detailing Einstein's huge involvement in the development of quantum theory, although at the time not understood or recognized, and historically poorly acknowledged by the physics community. In the book's text there is reference on a few occasions of Einstein's believe that there needs to be some "fusion" in the theory to arrive at some deeper level of understanding of the quanta phenomenon that exists between matter and waves. "In 1954, a year before his death …Einstein wrote…to de Broglie…Indeed, exactly like you, I am convinced that one must look for a substructure, a necessity that the present quantum theory hides." [2]

Upon the first mention of a fusion theory I was struck with the notion that my strange different idea presented here could possibly be judged as somewhat addressing that issue although I, of course, do not know what Einstein really had in mind. I have thus inserted some comments on this idea including an added subject subtitle borrowed from a line in the book.

Matter and Space

Physicists make an important distinction in dividing the world of particles into bosons and fermions. However, the very first obvious division is, perhaps because it is so accepted, mostly ignored. There is another division that should precede that of particles, and that is the seeming division of matter and space. The Universe has presented to us a structure we have perceived as a world of matter in an empty static void we call space. It seems reasonable that we should examine in more detail **this seeming division of matter and space. Is it real?** Of course, Einstein has erased the notion of space as a static background with the General Theory of Relativity showing Space-Time is dynamic, moving with and because of the presence of matter and the force of gravity.

When I started to put down my thoughts here I had no idea that the validity of Einstein's Theories of Special and General Relativity were ever questioned by some of the professionals in physics for over the past 100 years. I have looked extensively into what the critics have written and believe they have solid arguments against parts of these theories. I have added my perspective in greater detail later on because I think their position gives support to my own ideas on space. For now, I would only comment briefly.

Is real-time, not clock time, actually different for the biological clocks of those (relatively speaking) high speed travelers, or is this just a mathematical method required to introduce Space-Time and establish it as the essential 4-dimensional system? According to Einstein's theory Time is the critical element while calling it an illusion and declaring the velocity of light a constant for all observers in their reference frame.

If I understand Space-Time and Einstein's position, space no longer exists without the notion that it is one with Time and any movement includes the Time dimension and together that defines a path called Space-Time. In Special Relativity, he dismissed the very existence of space; there was only the empty void. In GR, space is back, undefined, but not alone. It exists only in its connection to Time. Is Time more important than light?*

* (It is written God said, "Let there be light, and there was light"; not let there be Time. There would not be anything w/o light)

Newton showed that it was possible to predict the movement of bodies, but he could not explain what the force of gravity is and what was responsible for the connection between bodies. Einstein seemingly explained this connection as the warping of space by matter and the path matter takes by the warping of space. But why does matter warp space? What is it that Einstein's gravity is warping? Some concept of the aether idea seems necessary. Is there not a deeper connection? Perhaps matter and space are tied together at the smallest scale and **space inevitably bends and twists with the movement of matter because they are permanently connected at the smallest scale.**

I suggest that **the total separation between matter and space is an illusion.** There is a connection, far beyond our limited perception, and at a scale far beyond what our instruments will ever likely detect. I am saying there is a deeper connection between matter and space that locks in the connection as the force of gravity; and that the structure of our Universe makes a unique definitive distinction with regards to how it functions and deals with energy depending on whether or not a particle has mass. This is a small, but perhaps significant observation that offers a new perspective on space and matter.

I will discuss here in greater detail that if matter and space have a deep and unbreakable connection, the mathematical construct of Space-Time is unnecessary, and not a part of our reality. The slowing down and speeding up of clocks, the quanta, the flow of energy, fermions and bosons, and gravity itself all have a more reasonable explanation if space and matter are viewed as being part of one system.

First, I would like to mention some of the questions that have led me to this perspective.

Unanswered Questions

A question about Einstein's Theory of Special Relativity that I wanted to find an answer to is ***why*** it is a truth that light should have the exemption of needing a frame of reference in regards to its velocity. Why is 'c' a constant regardless of the observer's position and velocity? Must there not be something unique about light that it has earned that exemption. I do understand that it has been verified in experiments, and physics says it is a necessity if causality is going to make sense, and that that is the important issue.[25] But I still wondered what was it about light that permitted light to earn the exemption.

Also, there are puzzles through history that have challenged physics, do not seem to have a clear explanation, and have had an impact on my thinking.

1.) The dual slit experiment. Is light a wave or a particle? It is a wave when we do not try interfering with it, but it is a particle when we do. No explanation gave a definitive answer. We just need to accept that it is both. Is there an alternative view that could account for this behavior?

2.) Richard Feynman in his lectures and writings[3] said light most certainly is a particle since regardless how low we set the intensity of light (even down to one photon) the detector still registered the same ping for a given frequency. Only the number of pings changed with the number of photons. Could the unchanging ping only be explained as the action of a particle?

3.) The photoelectric effect certainly provides an excellent rationale for a quantized photon as a particle. But if space and matter were given a different perspective, could the notion of particle have a new meaning.

4.) I read of the Fermi Experiment that found that regardless of how far light traveled, he could not find any time delay evidence showing how high energy photons (gamma rays) were slowed down as the suspected "space-time foam" acted on its different frequencies[4]. This was apparently not what physicists expected, but I understand it is consistent with Einstein's theory.

5.) There are massless particles, such as the photon and the gluon that have no rest mass. Is there something unique about having no mass?

6.) Why does a moving charge of matter create a magnetic field in space, and a changing magnetic field in space can create an electric current in matter.

7.) Are antiparticles the energy field geometric mirror image of their counterparts? Is equal, but opposite in charge nature's way to distinguish a geometric mirror difference?

8.) The Black Body catastrophe gave us the quantization of energy. I understand that the quantization of energy explained the experimental results and began Einstein's work on the quantum. I wondered not ***if*** it was quantized, but ***why*** "physically" it had to be quantized. **How** did nature accomplish this and **why** did nature require this?

9.) I have read from the book *"Order Out of Chaos"* by Ilya Prigogine[5] that science understands the reversibility of a dynamic system from Classical Newtonian physics, but also that this is at odds with the certainty of irreversibility we know from the laws of thermodynamics on a system. Might there be some feature of the world we are not recognizing that would account for the Arrow of Time and ever increasing Entropy?

10.) It is striking and seems unlikely (noted by Prigogine) that the gradient of heat flow is just a simple function of the temperature difference.[6] Would a new perspective make this observation reasonable?

11.) Does the Heisenberg Uncertainty Principle adequately explain why Absolute Zero is not possible?

12.) How does kinetic and potential energies fit in the picture?

13.) Is the absolute light speed barrier true?

14.) What of gravity, Dark Energy, and Dark Matter?

15.) What of the Higgs Field?

16.) Special Relativity, General Relativity, and Space-Time have long been accepted by most physicists. Some scholars of physics have been questioning them, but there arguments have been dismissed, suppressed and ignored for over 100 years.[30]

There might be some explanation for the above if one views the nature of Space and Matter from a different perspective.

Matter and Space as One

I propose **Space and Matter** are permanently tied together as **one system** which encompasses the dynamics of The Standard Model, Einstein's General Theory of Gravity and the warping of Space. It is time to rethink the idea of space and matter as aspects of something that engulfs and connects them both. What we define as the void we call space is outside of our perception and our ability to measure. Its existence is manifest in the presence of matter as defined in gravity by Newton, Einstein, and Maxwell by the fields' response we observe when magnetic material or a charge is present, whether stationary or moving. **Is space indicating its presence by the generation of fields?**

Our Universe is made of two **seemingly separate** distinct entities of energy fields, the Space Field (**SF**) and the Matter Field (**MF**), but ***they are always connected*** at the smallest scale of the quantum level at some ***'SF/MF interface'*** with the Electromagnetic Field (EMF) and the Gravity Field (GF). **Universe's structure does not permit total separation.**

Isolating matter from space at every scale is not a possibility. Space is where energy fields are massless. Matter is where the fields are "particles" that possess mass/inertia and sometimes charge but are still connected to the SF. $E = mc^2$ also tells us that matter and space are two sides of energy. **If matter can bend or warp space, is it possible that charged matter could also stimulate a response in the undetected energies of space producing what we call a field?**

I suspect space is a plethora, a sea of massless energy fields, almost all of which are outside human perception and instrument detection. Space is where massless energy fields of any character can manifest. These energy fields are almost always canceling each other out with the final effect being the momentary appearance of "virtual particles" and a net small positive energy, perhaps the source of Dark Energy; the result being the cosmological constant, and Universe expansion.

In the pure Space realm energy fields appear to be canceling out so nothing is detectable by our senses or instruments. However, their sum total is not nothingness. It is only the illusion of nothingness. **These massless undetectable energy fields sum up to establish the presence of what we call Space, but give no hint of their individual existence, only leaving behind what we perceive as a three dimensional empty void.**

> But they do not exist in total isolation. They interact and are connected to any presence of matter at a scale that is also outside our ability to perceive or detect. Space is one with Matter; it is only our brain's processing the information of the energy fields that gives rise to the idea that Space and Matter are separate. It is the interpretation of consciousness, our awareness.

Matter at extremely small scales is composed of stable**, Localized, Geometric Energy Fields** that have mass and wave characteristics that tie it to the SF. The **massless energy fields *are not in*** space, they ***are rather a pulse of space itself***. These fields become part of the Matter Field (MF) when a particle (a Localized Geometric Energy Field (**LGEF**)) 'acquires mass with or without charge. It appears the more confined, restricted in its movement the particle is, the greater is its mass/inertia. They are part of the MF, but ***can never be completely separated*** from the Space Field (SF) via this permanent connection of the Gravity field and the EMF for energy transfer. Each fundamental particle manifests a unique LGEF.

Gravity is nature's permanent bond between all Matter and all Space. Gravity says nature will not allow a complete separation. The MF and the SF are seemingly apart, but they dance together as one at the smallest scale. Space is the exclusive domain of massless energy fields, including the gravity field.

The Space Field / Matter Field Interface

> What of this notion of a *SF/MF interface*? Physicists want data points to help understand the universe. What data point does every physicist and non-physicist share? We all observe that there is a division between matter and space. We all recognize there is a transition that takes place, matter ends and space begins.
>
> Our eyes and our brains work together and convince us that that the sea of energy fields outside of us organize as matter or space but maintain a seeming division. Regardless what instruments we employ, and regardless what scale we use in observing this line of demarcation, we still are presented with the notion that something changes, something is different where the surface of matter ceases to be and space begins.

If everything is just energy fields, what generates, constitutes, this definitive separation? Is it the result of some demarcation; something very real because we all define and agree on this same transition line from matter to space? But physics tell us that 'particles' have no true definition, characteristics, everything is just some elusive energy wave function.

Then is the perceived world of solid form and space just an illusion? If that is the case, then what takes place at this energy interface? Even those who are gifted and can see energy fields[22] still observe that there is some transition even if it is not as well defined as most of us perceive it. Is it just that all matter waves are spatially limited?

Currently physics employs the Standard Model to focus on matter as real particles controlled with the strong, weak, and EMF forces; and the General Theory of Relativity to understand gravity, but where the two shall meet is not understood. I believe the approach presented here might give substance to the connection or "fusion" sought by Einstein between particles and waves. If space is never apart from matter at the smallest scale, could a mathematical modeling analysis of a *SF/MF interface*, give us a better understanding and picture of the whole? Does quantum theory tell us the mystery is at this interface?

> The Planck constant 6.626×10^{-34} that defines the quanta has units of m^2 kg/s. **Could this be interpreted as the mass/energy of one quantum of a specific radiation frequency *passing through a 2D surface area in a unit of time*? Or passing through a unit volume we get kg/m/sec, and then fully directional in space as Einstein suggested we need.[11] (See the section below titled *'The flow of Energy'*). Thus, the "doorway" between matter and space, the *SF/MF interface.* The quanta energy rule is set here between space and matter as space is in touch with all matter at every scale.**
>
> Light can exist at any wavelength as an energy pulse of space, but when it interacts with matter; its energy is restricted as an integer multiple (of energy steps) times Planck's constant times the frequency. From Stone's Einstein and the Quantum, Planck's discovery would put our world "out of focus..." "The even flow of natural processes would give way to an atomic world of sudden jumps and collapses."[7] Are these jumps due to nature's gate at the *SF/MF interface*? Perhaps there is a type of Topological Energy Vortex* between the matter and space fields. This TEV locks matter to space and manages the flow of energy manifesting in the quantization of energy, the light wave becoming the photon.

At the 'Beginning', a vast sea of concentrated, localized, massless energy fields simultaneously expanded/inflated as space or condensed to form various known and possibly still unknown fields to move towards equilibrium, from a singularity of extreme order and low entropy to chaos and higher entropy; **but in this process the MF stayed connected to the SF at some *'SF/MF interface',*** thus all particles have a wave characteristic. Universe did not permit a complete separation between matter and space.

> Space is just as significant as all that stuff we see residing in it as matter, perhaps more so. Physics says we are 99.99999999999996% space.[8] Space seems to play a much larger role then we assign to it in the Theory of General Relativity. Space is always connected to and always in communication with the MF. Space is more than an idle bystander whose only contribution is to bend and twist because of the presence of matter.

* (I should mention that I made this term up and got over 1.6 million hits on a Google search. I wonder if this is the home of the forever elusive magnetic monopole.)

The Nature of Light

We have recently learned that gravity waves have been detected. The cosmologists tell us these waves are ripples of space itself. Cannot then electromagnetic radiation also be considered a localized, geometric energy pulse of space itself; not something moving through a static medium or empty void? **If a field is a quantity/vector that exists at every point in space, then why not just say the field is the pulse of space itself.**

It is not in something, it is that something, a change in that something. I suggest **the EMF is a massless energy pulse of space, a ripple, a self-sustaining disturbance of space itself. The energy is transported as the medium, but the medium itself need not move when the energy is massless.**

If light is an energy field of space itself, then during the theorized inflationary phase of Universe expansion, light would have expanded and moved with this expansion. It would not need an acceleration or variation of its speed as some have suggested in order to explain the smoothness of the temperature in the CMB radiation.

If light is a true massless energy pulse of space itself, then it is understandable that the velocity of light is a quality unique to the massless flow of space energy that, when it is not in an accelerating frame or a gravitational field, would be confined to a velocity of 'c', not > or < 'c', and exempt from the frame of reference rule required of all objects with mass moving through space.

All objects with mass are no longer exclusively in the realm of space, and are thus subject to the frame of reference rule. The energy of massless objects can move through space without the need for the movement of space. The movement of space involves the presence of matter.

In Brian Greene's book "The Fabric of the Cosmos" he gives an example of character Bart believing he is traveling 500 million mph relative to Lisa and still obtains the constant light speed.[9] But if Bart was not measuring his velocity to anything else the 500 mmph becomes irrelevant and he naturally still obtains the speed of light as 'c'. The differences in distance and time obtained by Bart and Lisa become necessary because other matter is part of their measured system and light speed is said to be constant. The speed of light for an inertial frame in the vacuum is fixed because it is a pulse of space itself and it is not interacting with matter. When matter is involved and acceleration or gravity is in play then the real connection and interaction of space with matter means the velocity of light could be < or > 'c'. This leads to a real change in the mechanical function of clocks but it is not the time dilation suggested by Einstein.

The basic tenets of Einstein's Theory of Special Relativity are that the Laws of Physics are the same for all uniformly moving frames of reference and the speed of light in a vacuum is the constant 'c'. Thus employing these rules, he determined that time and length of uniformly moving frame B needed to change when viewed by stationary frame observer A.

Using the equations of Lorentz, Einstein finds that B's clock would run slower according to A. However, as Dingle argues, [29, 30] since this is a theory of Relativity, B could also consider himself as the stationary observer and declare it is A that has a clock that runs slower. This then should negate the theory since both A or B could make the same claim. Both observers can claim an equal time dilation for the other. This is obviously not valid. [32] This would also make meaningless the so called twin paradox long associated with SR. Trying to explain the SR twin paradox thought experiment by incorporating GR violates the basis of the argument for the establishment of SR in the first place. [33]

Each could calculate the other's clock is slowing, but neither can actually observe the other's clock. The idea of the clock slowing per Einstein is a consequence of holding the light speed at 'c'. This constant 'c' is an acceptable assumption and agrees with experiment for an observer's own uniform moving velocity frame w/o acceleration or the presence of gravity. That limiting factor is critical for a constant speed of 'c'. When we go past this ideal state, then light speed could change and we are unable to detect it as shown by Marett by what he calls the *"conspiracy of Light"*. [31]

> …"it is a self-correcting process of light where the obvious change in the apparent velocity of light due to the transverse velocity of the observer is perfectly cancelled by a change in the speed of light in the clock of the observer, due to it moving at the same velocity".

There is no justification for claiming that the slowing of a mechanical, or any clock, should also mean that a biological clock would slow down and the traveler B would age more slowly than A. Even if Einstein's claim of slowing clocks in SR is only valid in his equations, the 'constancy' of light speed as 'c' in the special ideal case of a non-accelerating uniformly moving frame is still true.

To hold on to a constant 'c' in an accelerating frame due to gravity leads to the acceptance of the clocks speeding up and inevitably the concept of a 4-dimensional space-time. It has been shown by Marett that the change in clocks could simply be the change in the speed of light in a varying gravitational potential due to gravity warping space, not some mysterious time dilation. The bending and twisting of space is a real consequence of the interaction of matter with space which always involves acceleration and /or gravity. This space/matter interacting reality is only accessible to us as a digital readout on an atomic clock because it is happening at scale far beyond our senses or ability to directly measure.

> "If the speed of light in two preferred frames is different, due to some difference in the properties of the medium of space at the two points, then the time dilation reflects the difference between the speeds of light in the two frames. Dt is proportional to Dv. This implies that the rate of acceleration due to gravity directly corresponds to the rate of change in the speed of light across space, due to changes in the nature of space in the gravitational field. Space is curved, rather than space-time." [30]

We are told that light cannot escape from a black hole. Does this mean it is stopped, the velocity is zero? Has the curvature of space led it to an inescapable dead end? If it is the case that light is in the grip of the gravity of a black hole, then it is certainly reasonable to think that the velocity of light would be other than 'c' in any gravitational field and would display a varying velocity profile across the gravitational potential of a planet, or a star, or within the reaches of a black hole. The observed time change is due to clocks that are affected by the interaction of matter and space in an accelerating and/or in a gravitational field. The curved space is part of the system.

Perhaps Einstein's interpretation has created a view of the world that is not real and is not necessary. After all, the Lorentz Theory (LT) also satisfies the experimental results and already embraces the idea of space being more than an empty void. Einstein's SR dismissed there being anything to space except an empty void. Then in GR space is something again in order to maintain the constant speed of light. The concept of a 4-dimensional Space-Time is the real illusion, a mathematical deception**. Allow for the interaction of the energy of the MF with the energy of the SF resulting in a variation of light speed in an accelerating and/or gravitational field and the clocks changing time is not a mystery.** The real interaction and connection of space and matter defines what happens. It becomes the natural consequence of the connection between the energy of space and the energy of matter.

This suggests that the movie 'Interstellar ' has it wrong in claiming that one hour on the planet in the grips of a black hole is equal to a span of seven years on the home planet, earth. Although it makes for an interesting story, is it a real possibility? [3] The argument is always that there have been numerous experiments showing GR is correct, but Lorentz Theory also satisfies the experiments. The difference is in the interpretation of the cause and the results.

Physics now agrees with Lorentz, Planck, and Maxwell that space is something. Again, there really is no evidence that a changing clock due to its interaction and acceleration in a gravitational field would also mean a change in the unknown biological clock that determines the mystery of the aging process.

Light is an energy wave disturbance/manifestation of space itself. It is not just an energy field that is moving in space, but it is, like gravity waves, another ripple of space itself, just as a different energy field, geometry, and frequency. Space is not a static observer watching light go by. It is a participant in the process. These waves that propagate through are in fact a ripple, a pulse, of space itself. Since light manifest as an energy pulse of space, it naturally follows the curvature of space in a gravitational field, and in the process, its velocity is slowed; thus there would be a difference in the clocks that are not having the same experience.

The fact that the speed of light can be calculated from two real measurable qualities of space itself should be convincing that space is more than a vacuum.

Maxwell found that the magnetic permeability of free space (u) was equivalent to the density of this medium r, and the shear modulus G was equivalent to the reciprocal of the electric permittivity of space (Eo).

$$c_{trans} = \sqrt{\frac{G}{\rho}} = \sqrt{\frac{\frac{1}{Eo}}{\mu}} = \left[\frac{1}{8.85E\text{-}12 \times 4\pi \times 10E\text{-}7}\right]^{\frac{1}{2}} = \text{speed of light} \quad \textbf{Eq. (1)}$$

It follows then that the speed of light has a *specific* velocity because this is the velocity of transverse waves in the medium of space, and this velocity is a function of the elasticity and density of this medium. Conversely, if space was a true vacuum, there would be no specific velocity attributed to light, since the only property of emptiness *is that it has no properties*. [35]

In the real world, the GPS effectively accounts for any potential changing clocking times without having to make use of Einstein's GR theory by synchronizing the clocks and the timing of light pulse signals to known fixed ground stations from at least four to six different satellites. [34]

3. Einstein made comments concerning God's behavior to justify his position such as "God does not play dice with the universe". Do we really need to believe God would design a world where a father could return from space travel to his daughter and she is now old and dying and he has not aged? Einstein also said God is not cruel. This is cruel.

The immense 'stiffness' of space[10] deals with the large amount of energy required to warp space from the interaction of space with matter via the gravitational field because the force of gravity is so small and because of the extremely small scale where this interaction takes place. I suggest that the massless EMF does not have this stiffness problem.

As an energy ripple of space traveling in a unified mass/space-time gravitational field, light must follow the bends and twists of space. Did Einstein prove that the Sun bends light or did he prove that the space around the Sun is bent? All massless energy fields are ripples of space itself and follow the bends and twists resulting from the presence of matter and its interaction with space.

Historically, we understand that physics once believed in the existence of the aether. Over time, after experiments, the aether was dismissed because its presence could not be detected. There is nothing there and light travels through the nothingness of space. But now we are told that space, this nothingness must be something because gravity can bend, warp, and twist it.

To avoid a real bending or twisting of Space, Einstein tied it to Time to create this 4D illusion. It cannot be pictured, but it is described as something like an elastic medium where the weight directs the path of matter rolling on its stretched surface; but it is not really that at all. **How about a seeming sea of undetectable energy mysterious and outside our comprehension that not only can respond to the presence of matter, but also to an imbalance of energy or other forces it encounters.**

When energy moves through water we see the medium as the wave, why not also for space. The medium adapts to the wave energy. There is not something separate moving through the medium of space. We do define a field to denote this energy. Space is an apparent empty void except where the localized energy field is propagating. The EMF is one with the SF. Do we really need another medium to define space? There is now a need for an aether or energy field that exhibits movement relative to the earth; there seems to be a need for something that would explain current observations. It cannot be treated as substance or matter. We can call it Space and it can be something real, but unknown.

Space is the stiff seemingly empty void medium that does not display any relative motion or measurable characteristic, but it still can be a medium in itself for the movement of energy. The medium of space is an infinite number of energy fields that cancel each other out, but 'wakes up' to the EMF and the presence of matter. There is only the energy sink of space and the energy space field becomes the wave when the EM energy calls. This is not just a disturbance in the medium; the energy of space becomes the disturbance.

Concerning the Fermi experiment, if light is an energy pulse of space itself, then it is reasonable that the so called 'space-time foam' is not acting on it to slow it down as if it were something from the outside traveling through the medium of space, and the experimental results of no change in the travel time for different frequencies of the long voyaged gamma rays is understandable.

As long as the energy is massless, it is confined to the SF, and it is perceived as an energy field, a wave. When we try to investigate this energy with our machines we have brought it into the MF. We have forced the wave of the SF to enter the MF. Light is a wave when it is an energy pulse of space and it is a quantized particle in order to interact with matter. Light is how energy is transferred between matter and space. Matter, as particles or LGEFs interact with the energy coming from space according to specific rules; and space, of which we have almost no understanding, interacts with the energy coming from matter.

What about when light interacts with matter, with an electron? The massless energy field we call light is transferred to the electron and we define it as a photon when this energy interacts with the MF. The electron can absorb photons from the light energy of the space field per the nhv quantum rule. And when the electron releases this energy we again witness the photon light energy at a lower frequency.

When a light wave interacts with an electron its energy is transferred to the electron via a photon as the *space/matter interface* requires a quanta exchange. When released from the electron it is again as a massless energy field response of space.

Is light a wave or a particle? Due we have to say this localized quanta of energy is a "particle"? The light energy wave has a transformation at the *SF/MF interface* and now we have a photon of energy when it passes the *SF/MF interface* and interacts with the electron. Now, at this point can we even say the photon is still there? The energy is now part of the electron cloud and that elicits a change in the electron energy manifesting in its position and velocity or a kinetic energy change in the atom.

When the energy is released, it is given off as a discrete directional amount of energy[11] as a photon at the *SF/MF interface*, but it is again now a light wave of localized energy at a specific frequency because now the energy is in an interaction with the space field. **A photon is a massless LGEF of the SF possessing uniform motion, momentum and relativistic mass, but has zero rest mass.**

There can be a distinctive change when one piece of matter interacts with another. A drop of colored dye will diffuse into the water changing from a large macro particle to many small molecular particles. This change begins instantly at the interface of the drop of dye and the surface of the water, at an interface we can easily observe. A definitive change occurs for a light wave of energy when it meets the interface of matter and we get a photon.

The massless energy fields of space become the LGEFs called particles with mass and possibly charge, but the particles are still connected to space and still possess a wave characteristic. The particle wave is spatially limited.[11] **A particle's unique localized geometric energy, its wave function pattern quantitatively defines its inertia/mass and properties**. What makes a LGEF stable? *

Complete separation is not permitted, even down to the black hole. Particles are seemingly apart from space, but are always connected at the smallest scale via some *'SF/MF interface'* that is Gravity. Matter can never be totally disconnected from space. Even at the density of black holes, matter is still connected to space. This provides for the Hawking radiation. The *'SF/MF interface*' serves as the black hole horizon.

*I suspect that their stability is somehow connected to the primes and Riemann's zeta function zeros.

From my college physics text book[12], relativistic kinetic energy is given by: $E = mc^2 – m_0c^2$; for a photon, the rest mass, m_0, is zero; and $E = hv$. Thus, $mc^2 = hv$; and $m/v = h/ c^2$, a constant, (or $p/v = h/c$), also a constant. If the relativistic mass or momentum divided by the frequency is a constant, would this not explain why a photon detector always registers the same ping for a specific frequency? **The same ping always found in Dr. Feynman's detector is the signature of the quantization of energy from the interaction between the space and matter fields.**

The observation is that light is a particle because that is our limited interaction with it and the detector when the MF meets the wave from the SF. It only collapses to a particle signature in the detector. Light is a particle when it involves an interaction with the MF. A particle only has a unique position and velocity when it interacts with matter.

The Heisenberg Uncertainty Principle tells us these qualities of matter are not necessarily specific to the particle as an energy field, but manifest when it interacts with matter. They are features assigned by physics, features we can get away with on a macro scale, but not on a micro scale. At the micro scale nature will only cooperate up to a point.

The dual slit experiment must be viewed as containing an energy wave of the space field itself until we interfere with it. Even if a single particle that is sent to the slits has mass, it still has its wave characteristic and is still connected to the SF. If we try to observe an electron going through a particular slit with light, the SF is again interacting with the MF.

The surrounding "empty void" of **space is part of the experiment**. There is an apparent paradox because **nature is pointing out that this is one experiment where we cannot ignore the connection of the SF to the MF.** Perhaps which slit the electron goes through is the wrong question. It only collapses to one slit because we force that. It really is 'going through' both because Space is a part of this system. This is not to say that we will be able to predict which slit the electron goes through if we force it, but we may have a better understanding of why we cannot make the prediction.

Yes, light maybe as Einstein says…"consists of a finite number of energy quanta that are localized in points, move without dividing, and can be absorbed or generated as a whole."[13] But the point I wish to make here is that, whatever light is, it is different as an independent energy pulse of space, and then as an energy interacting with matter. We need to take into account that space is always a part of the system when analyzing light behavior. In one we perceive it as a wave and in the other as a particle.

> Does the crossing of the '*SF/MF interface'* transfer transform the light wave energy into the photon quanta? Physics still sees a difference in the nature of light as it is present in space and what its character is when it interacts with matter as Dr. Baird, physics professor at the University of Massachusetts Lowell describes on his website.

> " If you look at light as a collection of little particles, you could say that dimmer light has its photons more spread out. But, they are not spread out in space while traveling. Rather, they are spread out in time and space as they are received. A sufficiently sensitive photon counter device can detect the reception of light one photon at a time. Shine light at such a device and it does not receive the light as a steady stream. Rather, it receives the light as a series of discrete bundles of energy separated by gaps in time. Similarly, shine light at a sufficiently sensitive array of photon counters, and it receives the light at point locations with spatial gaps between them. When viewed in this way, a light beam *always* has gaps between its photons, whether the light be very bright or very dim. Very dim light beams have larger gaps in time and space between the reception of each photon compared to brighter light beams. Light from a very distant star has spread out over a very large area and become very dim in the process. The gaps between photon reception from a very distant, dim star are therefore large. Again, it is only the reception time and locations that has gaps. There are no gaps in space between the photons as they travel."[23]

The Consequences of Scale

Science has observed that some of the properties of nano size matter are at odds with what we would expect from our understanding of physics and chemistry. Changing the scale produces a different unexpected effect. Size does matter to nature.

Could the force carriers just be manifestations of SF energies interacting with unique energy geometries of specific particles at different scales? Particles are manifestations of SF energies with unique geometries that have mass and possibly charge. Charge is limited to the matter field.

Physicists like to use thought experiments to make a point about their position; people who live in a 2D world or Einstein's famous examples of traveling with a light beam, or the inability to distinguish acceleration from the force of gravity come to mind. I thought I would try to put this method to use when looking at a known accepted force, the 'Strong Force'.

What if a giant being, far beyond our scale in size, and thus the degree of scales this being could perceive was limited, was observing the Earth; (a being somehow not subject to the scaling rules of bone and mass that limit our size.) To this being, earth is like the nucleus of an atom is to us. The being can measure movement at the nucleus (earth) of quarks (people) that are able to move about, but yet are confined and cannot leave the nucleus (earth).

For this being, this is apparently some 'strong force' with a limited range and thus he declares this is a new force, unlike the gravity he observes at his macro scale. But, of course, as we who are on the earth know, this is just gravity operating at a scale unobservable to this being.

> We can picture Bosons, the force carriers, as energy fields at different scales and some unique localized geometry (wave function). Gluons (the strong force), are the force carriers at the scale of quarks and the nucleus. W +/-/0 and Z are of the weak force. The photon (electromagnetic force) is at the scale of the atom and beyond. A field's strength changes with distance. We might suspect that as the geometry and scale changes, perhaps the nature of the force changes, but is it still the same force? Could the energy scale and length scale influence the resulting geometry forged from an energy field?
>
> From THE PARTCLE ADVENTURE website[14] [*"How can two objects affect one another without touching?" that we propose that the invisible force could be an exchange of force carrier particles. Particle physicists have found that we can explain the force of one particle acting on another to INCREDIBLE precision by the exchange of these force carrier particles*.]

They are "touching" in that the connection of space is always present. The incredible precision observed by physicists is due to the fact that space contributes an exact amount of energy in this "touching" event and that amount of energy manifests out of the particle accelerator experiments as particles called gluons, mesons, Higgs, etc.

Space's contribution to the stable coexistence inside protons and neutrons is the Strong Force. The Strong Force is present because space is there. It is the third partner in this balance between the MF and the SF. Do we need to create a fourth? Cannot it be that within protons and neutrons, space is pulsing in a special way because of the hadron presence? Does it need to be protons, neutrons, gluons, and then space indifferently accommodating the other three?

Gluons, as the massless strong force in protons and in neutrons, suggest that the SF has a special function within protons and neutrons. **The observations of confinement of quarks, and how the EMF binds neutral atoms together to form a molecule,**[28] **seem to be perfect examples that space itself is playing a key role in maintaining a stable system.**

The different energy fields of space are interacting with different LGEFs at different scales. When we explore these energies in particle accelerators we inevitably get the particles in the output at predicted energies. We are seeing the exchange of energies between the SF and the MF at different scales. The energy of space interacts with matter differently depending on the scale and geometry of that interaction. The Electric, Magnetic, and Gravity fields are a part of the connection between the SF and the MF. At what scale is the gravity field?

It seems now with the understanding of this connection that exists between the MF and the SF, a charged particle moving through space with its electric field, will prompt an immediate response of a magnetic field from space; and likewise a changing magnetic field could elicit an electric field in matter as **nature seeks, in both cases, an equilibrium between the MF and the SF**. The response arises also with an accelerating charge or electron spin. (This idea of electric and magnetic fields being nature's response to an imbalance of equilibrium seems much more reasonable than having to explain the presence of magnetic fields in relation to a moving charge with special relativity.)[24]

Are magnetic fields characterized by magnetic 'monopoles' at the point of the *MF/SF interface?*

> Maxwell's equation…" says that there is no magnetic charge at any point in space. Roughly speaking, moving charges are equivalent to currents. Maxwell equations assume that there is no magnetic charge, there is no magnetic current J_m … Hence, the absence of magnetic charge ruins the duality. In physics jargon, we say that the absence of magnetic charge breaks the symmetry. In order to maintain the electric-magnetic duality, we need to weaken our assumption. That is, we now assume that magnetic monopoles may exist, but we just have not been able to observe them experimentally. "[15]

Perhaps monopoles are not permitted in a vacuum, but are allowed at the '*SF/MF interface'*. Although we observe no moving magnetic charges or currents, we can "see" the magnetic lines of force which support the idea presented here that this energy is a characteristic of space itself. As a strictly unchanging magnetic field, the energy manifests as a stationary field with the poles at the *SF/MF interface* at a scale far beyond our detection. The system must be looked at as a whole which includes the magnetic material, the individual poles that nature treats as a system pair, and the space surrounding it all.

The Flow of Energy

Energy transfer by the heat process takes place through the SF. Matter on the micro scale can vibrate, rotate, collide, and change its internal energy state, but for an exchange of energy, it must flow through the intermediating SF that surrounds all matter. Any move towards thermal equilibrium means energy will move from or to matter via the SF. Physics says we can never really touch anything because of the electromagnetic force field. This also is saying that there is always the SF between all MFs and energy can only flow via the SF.

Thermal energy is the vibrational kinetic energy of matter. For this energy to transport between atoms it must move as massless radiant energy via the Space Field. This is the EM energy of quanta.

Matter to matter transfer of energy appears to take place on the macro scale. The properties of a dynamic system we observe from classical Newtonian mechanics are for a mass confined to moving through the SF at a scale that does not need to take into account the SF. At the macro scale, in an adiabatic process, the conservation of energy, and the conservation of momentum are defined by classical Newtonian mechanics, and appear confined to the MF.

Conduction and convection describe our observation of methods of heat transfer on a macro scale. These conditional factors do affect the process but, in the end, thermal energy is transferred through the SF at the quantum level as the heat process. Space is always the intermediator in the heat energy flow process. The quantum level is the gateway between the MF and the SF. Internal kinetic energy will transfer to the SF through the heat flow process.

For energy transfer by the heat process through the SF, it must do so as a massless field, that is, as a pulse, or ripple of the SF, a quantum of energy. If we see this flow as only taking place through the SF, then it is reasonable that the energy transfer rate is a simple function of the temperature difference, and the specific complex elemental matter involved adds an adjusting constant factor for its contribution.

> … "published in the scientific journal *Physical Review B*, suggest that quantum effects play a role in how heat moves through a material, challenging that classic notion that heat simply diffuses from a hot spot to a cold spot until the temperature is the same throughout." [16]

The SF as the seat of energy transfer adds to the foundation of the science of thermodynamics for a system. "Nature exerts a tax on the conversion of heat into work; some of the energy supplied by the hot source must be paid into the surroundings."[17] Since the heat flow process does mean a transfer of energy will take place through the SF, some of that energy will not be available back from the SF. The connection between the SF and MF gives the physical understanding to nature's tax and the 2nd Law of thermodynamics.

Energy could flow from the SF to the MF up to the temperature difference where the MF and the SF are in equilibrium. The heat flow process is radiant energy moving from a higher to lower temperature. It is always and only in that one direction. That arrow moves towards equilibrium, an increase in stability, the probability of more random states, an increase in entropy, moving with the arrow of time.

Attempts to achieve absolute zero are hindered by the technological road blocks faced when scientist try to obtain no molecular motion. In the end, no matter how close they get it is currently accepted that it will be impossible because of the quantum restriction of the Heisenberg Uncertainty Principle. If the idea that the energy of space is always connected to and can never be separated from matter, then it is reasonable to understand why absolute zero will not be reached without the need for the HUP. Does this give a different perspective on quantum theory itself?

Since energy transfer for the heat process is a simple function of the temperature difference, it is reasonable that the interface point for energy transfer is the *'SF/MF interface'*, and the interface acts as a directional gate or valve to control the flow of energy. This is the Quantum Gateway, the point for the ***quantization of energy***. Einstein's own words in his paper on *Theory of Radiation* seem to give support to this notion. [11]

> "***This derivation deserves consideration not only because of its simplicity, but especially because it appears to clarify the processes of emission and absorption of radiation in matter***, which is still in such darkness for us. And …"If a body emits the energy E it acquires a backward thrust [impulse] E/c if all the radiation is radiated in the same direction. If, however, the radiation occurs through a spatially symmetric process, for example, spherical waves, there is then no recoil at all. This alternative also plays a role in the quantum theory of radiation. ***If a molecule, in going from one possible quantum theoretic state to another, absorbs or emits the energy in the form of radiation, such an elementary process can be looked upon as partly or fully directed in space***, or also as a symmetric (non–directed) one. It turns out that ***we obtain a theory that is free of contradictions only if we consider the above elementary processes as being fully directed events…"*** (My bold and italics)

If the quantum of energy is determined by the gateway from the SF to MF or vis versa and "The Compton wavelength of a particle is equivalent to the wavelength of a photon whose energy is the same as the mass of the particle", [18] and Planck's constant, defines the quantum step; then the photon's relativistic mass[2] equals the mass of the electron at the Compton wavelength of the electron.

M_R = photon relativistic mass = Planck's constant / (speed of light x electron Compton wavelength)

M_R = photon relativistic mass = 6.6260693E-34 / (2.997925E+08 x 2.426310E-12)

M_R = photon relativistic mass = 9.109383E-31 = M_e, the Electron orbital mass @ electron Compton WL

Electron energy = $M_e \times c^2$ = 9.109383E-31 x $(2.997925E+08)^2$ = 8.187105E-14 joules

Photon energy at Compton wavelength of electron

From paper "Deriving Planck's Constant from Fundamental Physical Constant" by Koshun Suto: [19]

Electron mass x speed of light x electron Compton wavelength = Planck's constant

$M_e \times c \times \lambda_c$ = constant = h = 6.626069346E-34

M_e	9.109383E-31	kg	Electron mass (orbital)
c	2.997925E+08	m/sec	speed of light
λ_c	2.426310E-12	m	Compton wavelength

The currently adopted Planck's constant has the following value. *h* =6.6260693E-34 J・s or kg-m^2/sec

2 **Per Feynman:** "In case you are deciding …that electromagnetic mass is no longer meaningful,…There is definite experimental evidence of the existence of electromagnetic inertia—there is evidence that some of the mass of charged particles is electromagnetic in origin." [24]

If energy could always be transferred continuously without limit to and from the SF/MF, an object could not store internal energy, and work could not be done. Quantization is nature's way to control energy movement to achieve a move towards a stable equilibrium state. **Energy can only be exchanged in discrete units (quanta) because that exchange is a transfer of energy between the SF and MF.** Particles would not be stable if energy flow were not quantized.

Gravity

Gravity, we are told, is canceled out at the atomic scale because its force is so small compared to the atomic forces present. It is an attractive force only, its reach is infinite, and its strength is not canceled out when we put N x 10^{y} atoms together as in a planet. Astronomically, the movement and rotation of matter causes the bending and twisting of space. The bending and twisting of space directs the movement and rotation of matter. Locally, objects fall. Thus, we have the reality that one mass attracts another.

To be consistent with what I have suggested above, space will bend and twist because it is always connected as one with matter. They cannot be separated. Space has been likened "to an elastic medium that bends and warps in response to the presence of matter" by soviet physicist Andrei Sakharov. [20] Einstein has married space to time and made it an abstract concept that leads to false notions that the rate of all clocks is a function of one observer's relativistic frame of reference of another frame of reference. It seems that logic itself has been warped, bent, and twisted by mathematics and reason being cast aside. Equations can have more than one solution and not all of them are real and the meaning of the real solutions can be misinterpreted. The problem comes from insisting we all see the same speed of light regardless of our frame of reference.

What keeps all of space connected? What ties every point of space together and space to matter? Could the gravity field be the energy field tying every point of space to every point of space and the MF to the SF? Is that field's strength so small because of the scale at which it operates? Perhaps the Planck Force is how nature insures that the MF and SF cannot be separated. Matter and Space fields are as one common connected field at the smallest scale.

Gravity is more than the mystery force we cannot pin down or unify with the other known forces. It is what gives the stability and order we require to be comfortable and at ease in this world we have assembled. It is the one force that we are always so obviously in touch with, but generally not conscious of it. It is the manifestation of the whole that is in every part.

Could we just say that space is the superposition of a sea of massless energies whose geometries interact with the accelerating energy geometries that have mass (moving clocks); and this interaction bends, twists, and warps space affecting the speed of light as well as the movement of clocks because **in the end the light and moving mass must dance in a way that maintains a conservation of energy and momentum. Adjusting time is not necessary for that energy conservation; it is just a physical consequence experienced by the clock's (matter field) interaction with the space field.**

Perhaps it is more correct to say the incredible small force of gravity is everywhere rather than that it has a long range. Gravity has a long range because it is at every point of space and matter. Where matter is concentrated this force manifests more largely and its effect is stronger over a longer distance. It is like the heat process, the greater the temperature and larger an object is, the hotter it feels and the farther one can feel its effect. The message of gravity is continuously transmitted.

What of Dark Matter? Could DM be the manifestation of the gravity energy field itself within space as a natural projection when standard matter is present, but only 'visible' on a large scale as in a galaxy? After all, we 'observe' that **DM only has a gravitational effect** and apparently **no other interaction** with its surroundings. We only 'see' DM at the huge scale of galaxies because it is such a small force. It takes this large scale system of standard matter and space for us to observe its effect.

Is this the case because **DM is no more than the space component of the massless gravity energy field**? Is it present in all of space at the smallest scale? Astronomers were declaring decades ago that there was not enough matter in galaxies to hold it together.[26] There needed to be more matter. Perhaps the space component of gravity is the missing energy, the missing matter. It is very small until one examines it effect on the astronomical scale of a galaxy.

Newton said the mass of objects, and the distance between them affects the force they experience. Einstein said that the bending and twisting of space dynamics between these objects is this force. Can we say that massless energy fields condensed to localized geometric energy fields as particles with mass are never separated from the massless field, the Space Field?

Gravity is the massless energy field at every point of space and the permanent bonding connection between matter and space at the '*SF/MF interface'* (at the Planck length, less than the Planck length, or in the realm of some extra dimension.) At the smallest scale the Matter Field and the Space Field are one.

If matter is moving through space, and it will be under some frame of reference, then the attached space must move with it. If the matter is spinning, then the connected space will inevitably twist. The SF bends and twists as matter moves and spins. During acceleration matter is pulling on its connected space, space is pulling back, and this accelerating force is a function of the mass involved, which is the inertial mass. But this is the same mass that is associated with the gravitational force.

Recently in the physics news is the story on negative (not anti) matter that under the proper experimental conditions Newton's 2nd law is reversed, pushing on an object results in it moving toward you[27]. Is this an example where space is playing a part in this observable phenomenon? Perhaps the Casimir Effect and the deep theorem of physics known as Fluctuation-Dissipation are also examples where space is playing a significant role.

[This suggests the possibility, although certainly a stretch, of antigravity. Matter and space are tied together. Matter pulls on space and space pulls back following Newton's law. But then so might matter push on space and space push back. What mechanism could generate this response? A standard comment on the 3rd law is:

"Newton's Third Law states that "every action has an equal and opposite reaction". In a rocket, burning fuel creates a push on the front of the rocket pushing it forward. This creates an equal and opposite push on the exhaust gas backwards." (Smithsonian Natural air and Space Museum)[21]

This is a rather awkward statement. It is easier to just say the gases push on the space and the space pushes back moving the rocket forward. It does overcome gravity.**]**

What of the Higgs field that is said to permeate all of space? Remember, we were told there is no aether, but now there is the Higgs field; oh, and don't forget that something is there that gravity can bend, warp, and twist. Why not just say that space is the superposition of all massless fields present creating space, interacting with matter at all scales, and maintaining an equilibrium between forces whether at the micro particle size or at the size of galaxies. It is not an empty void; it is the infinity of fields that can resist an accelerating mass.

Could the jostling of the Higgs particle in the collision of high energy protons simply be Space responding per Newton's 3rd Law, the natural "resistance" of Space? It is space pushing back and it is only now observable at these high energy experiments. The collision tells us we cannot squeeze space out of the picture when colliding high energy particles and the energy of that space will be released. Yes, there is something there that is real.

The perception of gravity is the result of space and matter interaction. The scale at which this interaction takes place defines the force of gravity. Gravity is the unbreakable link in the chain locking the MF to the SF. The interaction at the level of a quark, a planet, a solar system, or a galactic system is different because of the degree (surface area) to which the *'SF/MF interface'* is in the defined system.

A higher mass density means a greater interaction of the SF with the MF. An increasing density is an increasing area of the *'SF/MF interface'* and thus an increase in the 'force of gravity'. An increase to its limit would be a black hole and a resultant horizon.

An increase in the mass volume is also an increase in the area of the *'SF/MF interface'* and thus an increase in the force of gravity. It increases with the increasing size of the SF/MF system. A large galactic system contains a much greater volume of space and space/matter energy interface in that defined system. It is this *'force field'* that keeps any MF connected to the SF. The energy field of Gravity in the SF is the same energy field connected to particles in the MF. They are always present and binding the SF and the MF. They are as one.

Adding It All Up

In summary:

- Space is the realm of massless energy fields
  The superposition of these fields is the seemingly empty void of space with the manifestation and disappearance of 'virtual particles' allowed and in the end, a small positive energy that is the source of Dark energy and Universe expansion.
- The Matter Field is where unique energy fields with mass/inertia are particles; that is, unique Localized Geometric Energy Fields that have mass and possibly charge. But as particles they are never separated from the Space Field.

- A particle's unique Localized Geometric Energy Field is what determines its rest mass (inertia) and its properties. The more confined it is, the greater its mass.
- Massless energy fields such as light are a ripple of space itself moving at speed 'c'.
- Space and Matter are two unique, seemingly separate manifestations of the connected dynamic of the Matter/Space energy fields system we call Universe. They appear to be separate, but they are always connected.
- The Electric and Magnetic Fields connection between the SF and MF triggers the immediate generation of a magnetic field from a moving charge, or the possible immediate generation of an electric current from a changing magnetic field; a natural response between matter and space to maintain balance in this dynamic system.
- Nature has provided a 'lock' (the Planck Force) for the MF to the SF. Thus insuring that the MF and SF are connected and move together as one, and confirming both Newton's work, that found, even without any added external force, that the gravitational force felt by a body is proportional to its mass; and Einstein's Theory of General Relativity that the structure of space is connected to the concept of gravity.
- The energy field that is gravity operates at the smallest scale. It is present in both the SF and the MF and its full interaction manifests at the scale of galaxies where we "observe Dark Matter".
- Space is the true conduit for transferring energy between Matter Fields. All energy transfer takes place at the quantum scale via the EMF. It only appears to occur as a mechanical transfer at the macro scale. This could contribute to the microscopic perspective on the thermodynamic principle of irreversible processes.
- The failure to achieve Absolute Zero can be understood from the permanent bond of the Matter Field to the Space Field. The energy of space is always in touch with matter.
- The *'SF/MF interface'* serves as the quantization mechanism for energy transfer. It is a type of Topological Energy Vortex, a door between matter and space.
- The quantization of energy and its flow from the MF to the SF is consistent with the natural increasing entropy of a system.
- The photon's relativistic mass is equal to the electron's orbital mass at the electron Compton wavelength.
- The Matter and Space fields' connection allows/accounts for the variation of light speed in any reference frame experiencing acceleration and or gravity.
- Einstein's 4-dimensional Space-Time is incorrect and is not necessary.
- Time dilation of biological clocks is not part of reality.
- The SF and MF are connected at the smallest possible scale (Planck length or smaller, or some hidden dimension) where it is a continuous energy field. This allows for the mystery of spooky action at a distance, quantum tunneling, and the strange quantum entanglements.
- Including Space in our understanding of the whole could reduce the strangeness of quantum theory. It could clarify our perception of what is happening in the experimental effects observed in the Casimir Effect, Fluctuation-dissipation Theory, and what is currently referred to as 'negative matter'.

- Perhaps there is only One Force, THE FORCE; and it manifests differently depending on the unique Localized Geometric Energy Field(s) of the particle(s) involved and the scale at which this encounter between space and matter takes place.
- Everything is connected to everything everywhere at that smallest scale.

I do not think that the above is in conflict with the Standard Model or QFT, but I do believe it provides a different perspective on viewing the puzzle, the phenomenon that is not yet explained by physics, and the disagreements among the physicists themselves.

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If decades of work could be generated for physic scholars based on the idea of vibrating strings around the size of the Planck length, perhaps something of value could be realized from a holistic perspective that attempts to unify a connection between matter and space.

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