“Local Time Theory” by Gene Stranathan (9/1/17)

Abstract/Author's Notes

This paper proposes an alternate way of thinking of 'empty' space and its interactions with matter, which may further explain certain mechanics of the universe, such as the behaviors of light, gravity and other forces. This paper will serve as a placeholder to communicate the general concepts until I am able to refine it further.

To whom it may concern,

As someone who appreciates the many advances made by the hard working members of the scientific community and the accomplishments their labors have produced, I humbly present you with this layman's theory of the behaviors of space-time for your consideration, in the hopes that it may be of use. I realize to even imply that I've some sort of insight on this subject is quite optimistic coming from anyone without a formal education in Physics, (Science is hard) but please humor me until you have read the attached five pages which may surprise you. I assume that you, the reader, are familiar with these forces and terminology referenced within much more so than I, and count on your experience to objectively decide whether this theory needs work or is actually worthy of any further investigation. To my knowledge none of the following hypotheses within are unoriginal or violate any existing theories/laws; however, please remember that my understanding of the more complex mathematics used in physics, such as vector calculus and so on, is lacking to say the least. So I am currently unable to provide any grand formulas, just a ratio and the logic behind my thinking so that people smarter than I might perform tests or observations of their own in regards to the validity of these hypotheses if they so choose. This theory does not seek to alter any proven mathematics regarding existing laws/theories, (Quantum Mechanics, Relativity, electromagnetism, gravity, light, thermodynamics, etc.) but instead I hope it will help further describe their concepts in a more general sense, as a possible model of the currently unexplained reactions in these theories and physics in general.

What I have done is examined existing theories/laws of the mechanics of our universe which behave in ways that may appear counter-intuitive, and created a theory that aims to explain how these inconsistencies might indicate the presence of forces only observable through indirect means. The result did not appear to break any existing laws (conservation of energy, relativity, etc.) and was also quite simple in the grand scheme of things, which is why I felt the need to share my hypotheses with those more knowledgeable in this subject and with the means to test such abstract concepts. The following pages contain predicted behaviors of a force carrier for 'time' which may be most easily imagined as the antithesis of visible matter (not antimatter), and is similar to the concept of space-time as already defined by relativity. Subsequent pages will try to expand on those points and provide reproducible thought experiments of these ideas when possible. Please note that I use terms like “time particles” loosely, as a way to describe a “field or charge in a fixed location in space which resists matter in the form of gravity/time”. I will also try to provide context in the form of parentheses throughout the theory to help clarify, either when referencing an existing theory/law or as general notes. I trust that anyone reading this understands that I am not trying to take credit of any kind when referencing existing theories or laws, which are all so well known that you should easily discern them from my original thoughts. (Such as: E=MC^2, speed of light in vacuum, etc., which are obviously not my ideas) Thank you for taking the time to read.

Predicted behaviors of a force carrier for time or 'time particle'

The hypothesized charged particles which act as the force carriers for time permeate the entire universe, including 'empty' space, at an even distribution of energy per unit of volume throughout. These 'time particles' remain in a fixed location in space due to their overlapping fields, and cannot directly collide with any observable matter, including light, so these forces may not be as easily observed as other phenomena. I hypothesize that these particles have three properties that might allow us to describe them: through their interactions with other nearby time particles, the em spectrum/ magnetic fields, and the mass in the matter which composes us. These particles and their resulting fields may have an exotic (x,y) charge (instead of normal matter's (+,-)) which interferes with mass in the form of time/gravity but not with em waves or fields, which instead displace the time particle's field equal to the energy of the em wave/field. While this force is not particularly powerful in it's 'intensity' per volume, it spreads evenly across the entire universe, so no matter the level of displacement, it is eventually equalized by adjacent particles pushing back. This could also explain why magnetic fields (continuous displacement) require a central mass to create and maintain them, (ampere's circuital law) yet the force is still weak enough per volume to allow particles such as electrons and photons to displace it.

First, we can predict that the fields produced by said time particles are responsible for their even distribution and are what maintain their exact position in space, through repelling/attracting one another, otherwise they would permanently move out of place when acted on by outside forces. This attraction/resistance between particles prevents them from leaving their state of rest on their own, which is 0,0,0 on their respective x,y,z axis in space; however, their fields can be displaced by electromagnetic waves/electrons which have little to no mass so they do not react with the time particle's field ('flow' of time) in the same way as matter with mass. The field is displaced equally to the energy carried in the focal point of the em wave and the proximity of the wave to any interfering magnetic fields/matter creating em 'displacements' in the same volume with reacting charges. The forces 'pushing' these time particle's fields back into their original/rest position are likely powerful, and may be responsible for the great speed at which light/magnetic fields travel, as the displaced 'time-field" may push the wave forward to return to a rest state as soon as possible. This may offer an explanation to why the velocity of an atom isn't additive to the velocity of any photons/electrons it releases, as the photon in this theory is not experiencing the passage of time and is carried by the tensile forces between time particles, which propels energy without mass to 'get rid of it'. The fields produced by magnets behave differently than light because they are 'anchored' to the mass producing the field (the source of the charge) as it travels through space and time, producing a uniform displacement in the x,y,z axis of nearby time particles' fields relative to the charge/orientation of the emitter. Interactions between charged particles (electrons, protons, photons, etc) through their displacement (waves) in this theory occur when both waves occupy the same point in space (x,y,z coordinates relative to each other) and have either attracting or repelling charges. In the proton's case this may 'bend' the vector/waveform of the oppositely charged electron to curve and orbit the nucleus. I hypothesize that even captured electrons still displace the local time particle's field and are propelled forward by it, albeit at a reduced velocity because of the proton's interference with the electron's waveform and the electron's tiny amount of mass. Also the extremely low mass of an electron may cause it to behave uniquely, meaning that when an electron occupies the same volume as matter (mass) displacing time energy (energy is imbalanced and being passed on to local time particles) the wave of resisted time energy increases 'pressure' on the mass inside the electron since it occupies that same area. Thus the electron slows to below the speed of light, but when in a vacuum such as space where the energy is balanced, the electron can travel at the full speed of light and the time particles seem to not resist the small amount of mass. This may offer a way to test this hypothesis by quantifying the changes in an electron's behavior relative to the amount of displacement from nearby matter.

The second aspect of the time particle is how it reacts to the density of any mass inside of it's field, which could be described by the ratio TV^3 : MV^3, where TV^3 is the time energy (T) per unit of volume (V^3) and is a constant. MV^3 is the total mass of the energy inside the same unit of volume (the variable) using E=MC^2 to find M, volume must be the same on both sides. This ratio describes the amount of volume required to 'offset' the mass inside of one unit or MV^3, but matter is always moving in some direction through these time particles which also affects the reaction. In 99% empty space which is common throughout 96% the universe, this ratio should return an answer like 1:1 where the extremely low density of hydrogen atoms in interstellar space balance out the weak single unit of time 'force or energy per unit of time' produced by one time particle. In a scenario where you get an unbalanced ratio such as 1:10, the time 'resisted' by the 9 extra units of mass 'pushing' outward against the field (time) would be displaced to the 9 time particles closest to the offending field that are also lower energy fields (1:9 or less). This force is applied inward and equally in all directions, so the 1:10 object remains stationary. So if an object with a ratio of 1:5 enters the range of said 1:10 object and the surrounding time-field displacements overlap, the small and large objects would find the field(s) in the volume directly between them now has the greatest imbalance (for example something like 2:15), like a bridge of least resistance. The time 'fields' surrounding both objects is now resisting inward against their masses with force equal to their combined displacement (15:5 and 15:10 respectively), which exceeds either of their individual masses, 'pushing' them together to equalize the imbalance in the form of gravity (rubber sheet example is a good visual). This effect remains unchanged from gravity as already observed, but by thinking of this force as the result of overlaps in the displacements of objects, where the normally equal inward push of time/gravity becomes directional and overcomes the inertia of one or both of the objects, offers a possible explanation as to why time/gravity is directly related to energy density. A time particle's field also reacts to the velocity of matter moving through its space, so that velocity adds to the object's total 'resistance' relative to the stationary time particles, and the resulting displacement is experienced by the object as time dilation (Less time appears to pass per distance traveled). In objects such as black holes, the energy displaced becomes great enough to pull in light being moved by time particles that cross the event horizon (gravitational lens), and so little time passes in the view of the black hole that it is practically a fast lane into the future relative to its surroundings. In order to equalize the imbalanced energy distribution of massive objects which threaten to disrupt the universe's singular time-frame by traveling through 'time' faster than their surroundings, the 'field' of time particles cannot be 'spatially' displaced by matter with mass (other than magnetically), so the time particle's field must 'flip' when met with sufficient resistance (1:2,+) and instantly reverse its polarity, sending a 'wave' through adjacent points at the speed of light. Time particles naturally keep charges aligned (path of least resistance), so when one flips it resists/attracts all of the surrounding particles which passes the energy on through other fields as a wave. The rate at which the polarity cycles could be considered the 'local clock' that keeps up with the matter inside of its field, the denser the energy, the faster the time particle's charge flips, keeping the universe moving forward in a singular time-frame without any paradoxes. The level of energy imbalance also determines the range of the effect and how far/intense the resulting displacement of energy propagates in three dimensions as the 'flip' travels outward. This effect accumulates over time, but since all matter is moving through space in some direction relative to these time particles which are the 'universal observer', it doesn't stay inside of the same fields for long. This also means that an atom's velocity, or the speed at which it travels through time particles, is included as 'energy' relative to this force. This includes the movement of atoms as 'temperature', which helps explain how simply moving counts as adding to an object's energy as seen by the forces of nature. This rapidly changing charge may also be 'shaking' atoms in the form of increased kinetic energy/temperature in high displacement areas, which may be responsible for preventing matter from reaching temperatures of absolute zero. Superconductors make work opposite of this, where sufficiently cooled atoms lose electrical resistance by 'synchronizing' with local time particles and handling em fields as they do, although the field is still anchored to the magnet's mass.

Now that I've given you an overview of the predicted force carrier in reference to to some other observed materials/forces of the universe, the remainder of this paper will serve to better explain the thought experiments and logic that led me to these hypotheses in a FAQ format containing some of the questions I felt were likely to be asked by anyone with a healthy skepticism.

1. **Why a time 'particle'?** If you could flip the universe so that it was 96% matter and 4% empty space what would it look like? Perhaps at first the universe would be appear “inverted” with matter where empty space would normally be and vice-versa. Gravity would quickly begin to compress things however, and before long you would have plenty of empty space again as the matter around you began to collapse into super-massive black holes. A universe like this may be fairly short lived, and begs the question: Does this mean more empty space, more time? (The farther apart things are, the longer a 'cycle' takes?) This could be why matter exists in such small quantities in the universe, much like how pauses between notes are needed in music, the energies that reside in what we think of as the 'empty' space of the universe could be an indicator of the antithesis of matter which is necessary for it to function correctly. What I mean by that is that matter and the time particle could be thought of as necessary opposites, in that matter's main properties are creating/reacting with light, energy, mass, and velocity, where the time particle's (or “empty” space's) are getting rid of light, force per volume, reaction to mass in same volume, and remaining stationary. Any interaction or 'event' that occurs in our visible universe, such as spaceship gaining speed, could be thought of as energy gained relative to these invisible opposing forces. Time as we know it, may simply be the rate of interactions between matter and the field of the time-particle which it inhabits, explaining why time passes so slowly in the perspective of a relativistic traveler. This energy isn't likely to be infinite however, and we may be able to validate the existence of such a force through observing the shape of the universe, which may be bubble shaped if these time particles attract or perhaps fan shaped if they electrically repel one another.

2. **Why is the universe 'locked' into a singular time frame by some force?** (The visible universe travels forward together, you can't “get ahead” of other matter in time just by going fast) Time dilation is an observable force, however despite it's existence, it doesn't cause any paradoxes. What do I mean by that? Imagine that I traveled in a circle around the Earth fast enough to 'gain' a day through time dilation before decelerating. Now if there were separate time frames, meaning that if it were possible to travel through time as a fourth dimension by accelerating, I would have just traveled into the future and would be a day ahead of everyone I had just left behind, but they would be traveling forward at the same rate as me once I decelerated, so our paths would never intersect. This also raises questions as to whether there would be two separate universes now that I was one day ahead of everyone, with one for me and one for everyone else? But this would violate the law of conservation of energy, as the universe would have to duplicate itself every time something traveled at relativistic speeds, and that seems unlikely. So through the process of elimination we can say that a single time frame seems more feasible, and that all matter is moving forward in time together relative to something else. But now how do we explain time dilation? You most certainly can travel far into the future relative to stationary observers if you can gain enough velocity, but when you arrive everything else has had a tremendous amount of time pass, while a fraction of this has passed for you. In my humble opinion, this appears to be an indication that the time is being displaced by objects with a high concentration of energy per volume to the lower density matter nearby to keep the universe 'in-sync' relative to energy density as found with E=MC^2.

3. **How does the universe equally distribute this 'time' everywhere?** If time behaves like other observable energy, maybe we can at least count on the fact that it's probably moving toward a lower energy state in its own way right? Although I have to admit I'm not sure what this low energy state would be, (perhaps the heat death of the universe?) it only raises more fundamental questions like that if time is in fact a limited energy, wouldn't the universe just stop moving once the 'flow' had equalized? Also if time is a finite energy in the fourth dimension, why didn't the huge imbalance of energy at the 'beginning of time' cause it to dump its potential energy all at once to send the universe directly to the 'end' of time? Why is it such a slow reaction? If we instead imagine time/gravity as a resisting 'force' of space which reacts to the energy density of matter inhabiting its volume, which only interferes with other time particles and mass (through gravity/time), it makes more sense as to why the 'seas' of space and time are so incredibly vast. This is could be why time passes so slowly for low energy objects, with the longest possible time perceived per distance likely being a single ionic hydrogen atom in space. With the TV^3 : MV^3 ratio mentioned earlier, we may be able to quantify imbalances in the time/mass reaction, where TV^3 is the volume occupied by a single unit of 'time energy' and is constant. MV^3 is the total mass of the matter inside that same area and is the variable. This formula gives us a 1:0 ratio in truly empty space (absolutely no mass), which is uncommon and may only be found in deep space. I hypothesize that when enough light or other very low mass energy reaches these 1:0 pockets on the 'edges' of space (where time is 'stopped'), the sum of the captured energy is converted into a particle with mass to restore balance, which may explain the expansion of the universe. Since there are plenty of hydrogen atoms and other random elements scattered around 'normal' space, 1:1 is likely to be preferred by the universe. You might think of this balanced state as an indication that one unit of time energy can be 'grounded' by the mass/energy of one hydrogen atom. This is convenient because the atomic weight of hydrogen is also 1, so perhaps these time particles can have their properties extrapolated from this possible connection. (Perhaps the force of one unit of time is equal to the mass of the atom?) When you start packing more atoms into the same volume, the ratio becomes more unbalanced (resists 'flow of time'), and nearby time particles with less energy in their respective volumes push inward towards center mass to equalize. Earth may average something like 1:25, where the displacement is not enough to effect the passage of time in a meaningful way, but still massive enough to push smaller objects toward Earth with force. Jupiter is far more massive than Earth, so even at a lower density its total displacement is still significant and may be something along the lines of 1:85. The sun may be around 1:850, and so on, with the highest displacement objects being black holes, likely coming in well over 1:1k. This means that the mass of the black hole in this example would require the energy of the nearest 1000 time particles to 'equalize' the imbalance, per unit of time, which pushes back against the black hole as gravity. So an atom crossing into the area would find itself in a 1001:1 ratio and be pushed toward the black hole with force.

4. **Why doesn't light experience time?** This one makes the least sense in a classic view of the universe, but in the theory of relativity it is perfectly normal for a photon to travel for 20,000 years in a perfectly straight line with a constant velocity and not a second having passed in its perspective, yet it contains less energy than matter, which doesn't approach such speeds naturally outside of lone particles propelled by supernovae. Einstein addresses this in his Theory of Relativity, which says light has no mass, so no time passes for it. Empty space may hold the key to understanding 'why' in this case, as it is appears to be the ideal medium for light and can be found in 96% of the universe. I hypothesize that particles inside that empty space which are not obvious to us are what is actually 'carrying' the wave, yet we can only interact with the charge in the focal point of the waveform which is not moving 'through' time until it is anchored to an atom again. The proof here may be instead in what photons do when they are

about to collide with shorter wavelengths/energy, which is to go around. Photons have a balanced charge and don't interact with magnets, which produce a continuous displacement in the particles (its impossible to create both North/South displacement in the same volume so the magnetic field pulls and pushes equally which doesn't effect the photon); however, when the photon reaches a smaller wave with the same balanced charge, both charges attract/repel, so the photon and the smaller wave are displaced equal to the 'overlapping' energy. There is also no change to vector or velocity when this is observed, possibly indicating these waves are being "pushed" by something else. Another supporting observation for this hypothesis is that the velocity of an emitting atom does not add to the speed of light emitted, which makes sense if you imagine that the light wave is being 'pushed' by these particles. Perhaps this offers a way to test this aspect of the theory.

5. **Why doesn't this force slow down matter traveling through it if it resists it as gravity?** This force acts equally on matter from all directions, so the net force in any given direction will remain zero until there is an overlap in displacements as mentioned previously. The one exception to this may be as matter approaches the speed of light, the energy displaced by the ship is not able to move out of the way in time (moving at the speed of light) and this pressure pushes back on the ship.

6. **How could time and gravity be the same force? Time still passes in the micro-gravity of space.** Think of an hourglass, which measures time using the fixed gravity on the surface of Earth, if gravity and time are not directly connected then how are we able to reliably measure time by the speed/rate at which sand falls no matter when or where we are on the planet? Imagine somehow standing/floating on the surface of the Jupiter while holding an hourglass, which measures thirty seconds when flipped on Earth, and finding that the hourglass now empties in (for argument's sake:) twenty-nine seconds. The hourglass is not 'wrong' and should always measure twenty-nine seconds on the surface of Jupiter, but because of the hourglass's fixed properties it still measuring thirty seconds for 'Earth' when emptied as well. In this example you are just experiencing time dilation/increased gravity of a more massive body such as Jupiter where twenty-nine seconds passes for every thirty on Earth. Also this does not mean that perceived time changes drastically for humans in space where hourglasses don't work, they are still subject to the local time and gravity experienced relative to their total mass and velocity, but are no longer inside of the directional area of effect of a larger body's displacement on space-time. Some established observations supporting this are the mathematically described time dilation which occurs for massive/high velocity objects in the Lorentz equations, and that gravity appears to be the 'original' force responsible for the current distribution of matter in the universe, as well as for compressing hydrogen to the point of fusion in the stars which is vital to the function of our universe as we know it. It is well known that matter/energy always takes the path of least resistance forward, so perhaps gravity as we know it is simply matter taking the path of least resistance through the inward push of the 'flow of time' against mass? If this is not true and time is in fact a dimensional energy which occurs regardless of the presence of matter, then how could you judge if time is passing in a vacuum, where there are no changes to observe? If we think of time/gravity as an 'elastic' opposing force relative to energy/mass rather than an as a fourth dimension to move in, keeping all matter in the universe 'synchronized' regardless of its energy density and velocity, it removes the possibility of paradoxes and offers a possible explanation for the 'opposite' reactions of the two forces.