QUANTUM SPACE ELEMENTS (QSE)

Author: Peter Vass

BEng, Msc(Eng)

CONTENTS

1. ASSUMPTIONS

i. Space is discontinuous. It breaks down to indivisible space quanta; the space elements.
ii. Space elements are stationary. They accommodate and transfer information.
iii. Each space element can accommodate only a finite amount of information. It then becomes saturated.
iv. Information transfer is not instant. Processing is required.
v. Processing is inefficient. It can be executed for a very large but finite number of repetitions.

2. CONSIDERATIONS

2.1 Time
Time is rate of change. Time flow is not a primordial cosmic constant. It relates to the ageing of the universe (deterioration due to inefficiency).
There are two dimensions of time; conscious time and processing time. Conscious time (CT) is experienced through life and recorded through instrumentation.
Processing time (ΔT) is undetectable. The flow of time is absolute and can be defined as the sum of CT + ΔT.
Depending upon the properties of events, absolute time consists of different ratios between conscious and processing time. Since ΔT is undetectable, perception of time relates only to CT. Perceived time is therefore relative.

2.2 Frequency
Motion cannot exist in quantum space; there can only be state of presence and intention of motion. This realization introduces frequency.
Information propagates in quantum steps defined by the frequency of the universe. Frequency is defined by age; the current state of the cosmos. Early universe resonated in considerably higher frequency because it had not suffered deterioration due to its own inefficiency. Processing time (ΔT) and conscious time (CT) follow the universe's frequency F. Time is therefore quantized.

2.3 Geometry
Space elements are absolutely stationary providing the reference grid for information to exist within them. Nothing exists outside space elements and no distance is necessary between them. Space is in fact clearly continuous. What defines the individuality of each space element is time; its own rate of change.
Quantized time may be described as a layer of resistance (delay) in the propagation of information. This layer surrounds each space element, defining its existence. Space geometry translates into time geometry.

3. CONSEQUENCES

Considering events in terms of quantized information propagating in quantized time through quantum space produces the following consequences:

3.1 Quantum Relativity (Kinetics)

3.1.1 Relative motion

Any sequence of events occurring in the universe demands transition time between them, or otherwise instantaneous action (communication) is introduced. This would be in violation of everything science and human intuition stands for. Therefore ΔT is required to protect what is already known or feels to be real.

In a quantum space environment the mechanics of motion are different than in space-time continuum. Quantum mechanics demands that all motion occurs in pulses since time and space are quantized. The following diagram simplifies this type of motion in a synoptic graphical format. Information named "X" travels in slow speed through successive space elements from left to right:
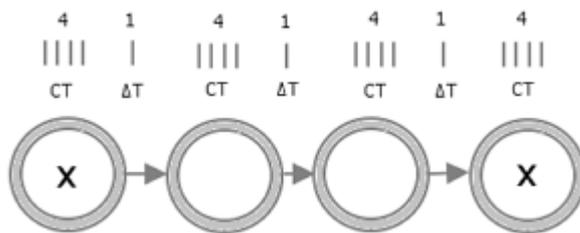
Total (absolute) time = CT +ΔT = 4+1+4+1+4+1+4 = 19 pulses

Conscious time (CT) = 4x4 = 16 pulses

Undetected time (ΔT) = 1+1+1 = 3 pulses

Therefore, traveler "X" has aged **16/19** pulses, meaning that only 16 pulses registered in the traveler's consciousness and physical state.

A faster moving traveler "Y" experiences the same absolute time of 19 pulses as follows:
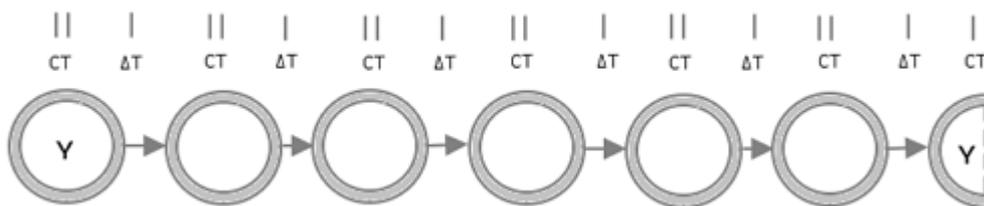
Total (absolute) time = CT +ΔT = 2+1+2+1+2+1+2+1+2+1+2 +1 = 19 pulses

Conscious time (CT): 2x6 + 1 = 13 pulses

Undetected time (ΔT) : 1+1+1+1+1+1 = 6 pulses

Therefore, traveler "Y" has aged **13/19** pulses, meaning that only 13 pulses registered in the traveler's consciousness and physical state.

Even though the total time is constant at 19 pulses, travelers at different speeds register different conscious time. If both travelers had synchronized clocks at the point of origin, then at t=19 the clock of the faster moving traveler would have registered slower time flow.

This is a direct consequence of disallowing instant transition between any two events with the introduction of an additional time dimension.

The previous examples are obviously not aligned with human intuition. The main reason is the difference in order of magnitude. Conscious time is what we experience through life. It is largely macroscopic. Transition time (ΔT) is always microscopic; in fact probably of an order of magnitude even smaller than this. Using real numbers, the difference in ageing between the travelers is infinitesimal. Thinking in terms of human perception, if conscious time was in seconds, ΔT would be in picoseconds or much less. In addition, ΔT is constant in a homogeneous medium (for example in vacuum). It does not fluctuate. Therefore the effect of motion in the perception of time flow is only relevant when CT and ΔT are of comparable magnitude. This can only occur at such high speed where CT is forced to diminish into a magnitude comparable to ΔT.

This means that ΔT, the introduced transition time between events (the new time dimension), is of such microscopic order of magnitude that only becomes apparent in the special condition of events occurring at a frequency which is fast enough to be comparable to the universe's frequency. This statement treats motion as a periodic event repeating itself between successive space elements as they accommodate and transfer the traveling information.

The diagram below displays the perception of time and space by travelers at various speeds in respect to the absolute frame of reference (the QSE grid), and also in respect to each other. This diagram plots velocity over distance travelled, and so time is inverted (1/t).
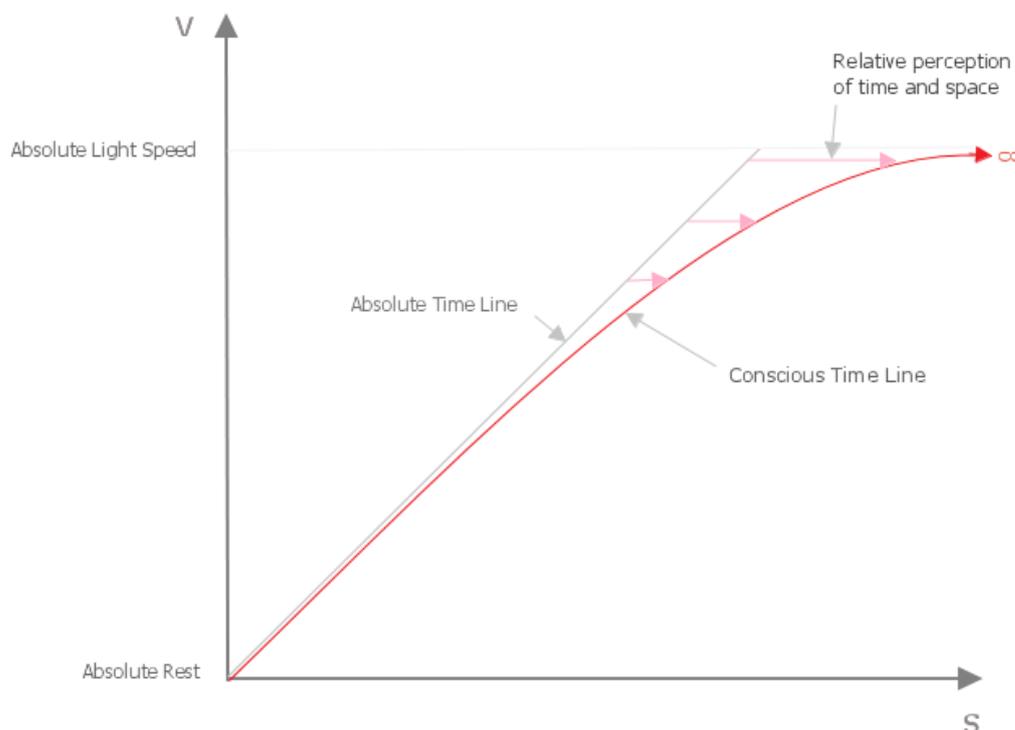
The *Absolute Time Line* is the perception of time flow and distance travelled at various velocities, if all dimensions of time are considered (CT+ΔT).

The *Conscious Time Line* is the perception of time flow and distance travelled at various velocities, if *only* CT is considered (human perception and instrumentation records). Perception of time and distance changes with velocity because ΔT becomes increasingly relevant at high velocities. Since ΔT remains undetected, every motion within the SE grid introduces its own reference frame which in turn needs to be consistent with every other reference frame, because there is an invisible common ground that bonds them all together; the absolute time flow in the absolute reference frame of the quantum space elements grid. As a result, the illusion of space-time relativity manifests itself at those velocities as a pseudo-geometric requirement. Such a requirement, however, is a derivative of some other, hidden, primordial process. The hidden time dimension ΔT. Had this undetected processing time been introduced within calculations then space-time would have always been absolute. The mathematical precision of all experiments and observations of the past 100+ years is sound, but the unrealistic assumption of light speed invariance is unnecessary (proof). Accordingly, the one-way speed of light is directly related to the observer's CT. Had we been able to measure one-way light speed, it would have not been invariant of Earth's motion and rotation through space. The actual observed light speed of 300,000 km/sec is the two-way light speed which entirely ignores the effect of CT differential since this is by definition cancelled out by the experiments themselves.

3.1.2 Maximum speed
As was mentioned earlier within the text, increased speed is faster rate of change. At increased speed information travels through more space elements within the same absolute time and therefore repetition of the quantum mechanism of motion is faster (state of presence / intention of motion); hence speed translates into frequency.
It is the frequency of the universe which defines the maximum allowed speed of propagation. Frequency of events can never be faster than the frequency of the universe. This is the fundamental quantum space property which limits the consequences of any event within a finite range away from the source as time propagates.

3.1.3 Mass and limitations on speed
The rate of change of space elements is proportional to the density of the travelling information; it depends on the level of information saturation within.
Information with the property we understand as mass can never travel at maximum speed because the space elements affected cannot propagate this information at the frequency of the universe. Saturation introduced by the density of the travelling information (mass), forces those SE to oscillate (receive/transfer information) always at lower frequency than that of the universe. It would require a theoretical infinite energy input to force those SE at maximum oscillation frequency.

3.2. Quantum Gravity (Potential)
A rain cloud is a well-defined shape in the sky. This shape is considered to be the border between "cloud" and "clear sky". This is because the naked eye cannot detect humidity unless the air is fully saturated and thus looks like a cloud. Taking a photograph using a special lens capturing humidity levels, the cloud would look

considerably larger and would extend away from the well-defined finite shape. Humidity saturation levels would diminish with distance.

Every massive body is a cloud of information travelling through the stationary quantum space grid. This information cloud is not confined within the boundaries observed or detected as mass, but extends to space elements away from the main body. Those space elements carry information directly linked to the main body. We call this information gravity. The region extending away from the main body is a gravity cloud bound to the main body. It is in fact an indistinguishable part of the main body, and it follows the main body in its direction of travel. They are one and the same. They cannot be separated in any way. They should be considered as one entity. Information saturation diminishes with distance from the main body meaning that gravity weakens with distance.

3.2.1 Mechanism of gravity
As noted above, information saturation is denser in proximity to the main body and dissipates with distance. Increased saturation demands more processing time for events to be resolved. Time is absolute and so further processing manifests as slower rate of change. The ratio of CT and ΔT within absolute time is affected. Processing time (ΔT) diminishes within regions of increased saturation. Macroscopically, this is observed as slower time flow relating to stronger gravitational fields.
The force of gravity is a derivative of the above condition and is discussed in the *Thermodynamics* section later on.

3.2.2 Dark Matter
It is gravity itself that is missing from the observed mass (rain cloud example; the missing humidity surrounding the visible cloud remains invisible). Gravity is not passive; it is active. It adds to the gravitational pull of the body it is linked to. It is an extension of that body. Mass and gravity share the same fundamental principal. They both introduce additional information into the volume of space they occupy, and therefore the properties of space change accordingly. As mentioned earlier, the primary information cloud (mass) and the secondary information cloud (gravity) are one unified region of information. One entity.
The concept of active fields is discussed further in the *Thermodynamics* section later on.

3.2.3 Black Holes
Perhaps not as exotic as the name suggests, if they exist at all. Black holes are fully saturated information regions. As such, the space elements they occupy are unable to accommodate or transfer additional information. Information is "trapped" within the region. Time, as we understand it, breaks down because rate of change is zero. Processing time ΔT does not exist within a fully saturated region and therefore no events materialize. Any additional inflow results in expanding the boundary of the fully saturated region. Black holes are solid bodies that expand. They are not dimensionless. They occupy an ever-expanding cloud of fully saturated space

elements. The "event horizon" is the boundary between space and the solid body that remains hidden behind. Going through the event horizon would result in a catastrophic crash upon the densest entity in the universe.

3.3 Retardation

3.3.1 Vacuum energy

Quantum space elements across the cosmos oscillate at the frequency of the universe anticipating interaction with information propagating within their vicinity. The frequency of oscillation defines the currently available vacuum energy. This is the underlying available energy source which still allows all processes to run. The dissipation of vacuum energy has been the energy invested in resolving all events throughout cosmic evolution. This process causes retardation in the cosmic time flow.

3.3.2 Age of the Universe

Cosmic ageing is the deterioration of this frequency. It cannot be estimated using the present rate of change because events have been unfolding much faster in the past, especially shortly after the origin of the cosmos. If retardation becomes part of the universe's age estimate process, then the numbers change significantly. The universe is considerably older than estimated. Perhaps the first 100 seconds are equivalent to more than 100 billion years of today's time flow rate.

3.3.3 Dark Energy

Space is absolutely stationary. Space elements do not move; it is only the information within that travels through them in the form of space properties' propagation. The expansion of space is an illusion resulting from misinterpreting the cosmological redshift. It is time that decelerates and not space that accelerates.
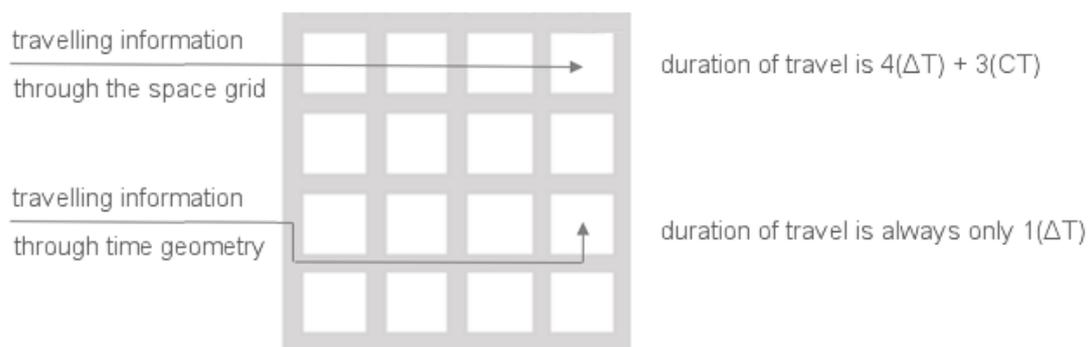As light from distant galaxies travels, it encounters older space elements. They are aged and all processes are decelerated. The oldest space elements are the ones we occupy at present. It is *our* region that creates the Doppler shift and not the region of the young galaxies we observe in the distant past. Our present frequency has deteriorated. Light travels more slowly in the present time than it was in the past. The cosmological redshift relates to age, time and retardation, not to distance, speed and acceleration. Space is not expanding. Light is decelerating.

Note: This is not in reference to "tired light". Energy is not being dissipated while travelling. It is the medium (space) that changes state and deteriorates as a result of cosmic ageing. The inefficiency exists within the medium of motion which negatively affects the propagation of motion, causing retardation.

3.4 Particles

Every particle is a local cloud of information. It occupies a large number of space elements since the S.E. dimensions are of different order of magnitude. This means that even the smallest particles extend over a vast number of space elements. The primordial particles are the space elements themselves.

The properties of the information cloud of any particle are *locked*. Nothing can change within the cloud without affecting the entire cloud. Change occurs simultaneously. This does not violate the law of ΔT. Change is not instant; it is only simultaneous. This is because CT between space elements is zero. Conscious time does not exist outside space elements, so information travels (and space element properties can change) simultaneously across unlimited regions of S.E. through a different type of motion which affects only time geometry and not the space elements grid. As such it is perceived to be instant even if information is communicated across unlimited distances. In fact information communication is never instant because one processing event is always necessary; one event of ΔT. This is undetected by instrumentation and therefore the illusion of instant action is manifested. This mechanism of information propagation through time geometry is responsible for all quantum events observed, such as quantum transitions between states of individual particles or quantum "action at a distance" between particle derivatives that remain entangled through time.

travelling information through the space grid — duration of travel is 4(ΔT) + 3(CT)

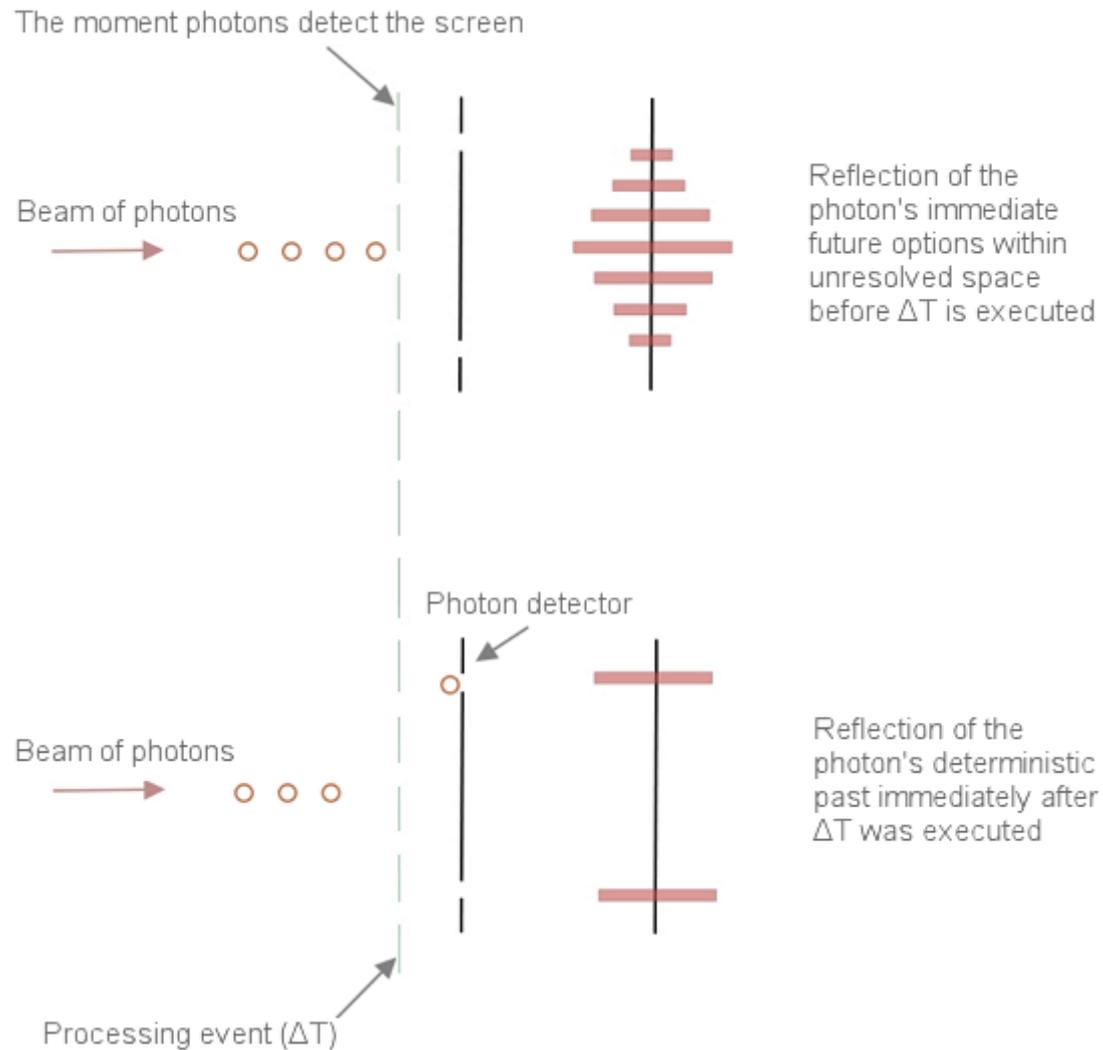travelling information through time geometry — duration of travel is always only 1(ΔT)

3.4.1. Duality

Every occurring event changes the properties of the space elements affected by that event. To understand an event it is necessary either to compare the present state to its immediate past, or to its immediate future. The change of state observed defines the event in question. Comparing to the past is straightforward because the past has already occurred, it has left its footprint, and therefore its nature is deterministic. Comparing to the future is tricky because the future allows for choice and so it involves uncertainty. It is always probabilistic and therefore stochastic. The consequence of this realization is that any single event can be at the same time either deterministic or stochastic, depending on the observational method used for detection.

3.4.2 Double slit experiment

If the particle's location information is extracted upon the slit screen, then the patterns observed on the detection screen are a reflection of the state of this particle immediately after it had executed processing of its available choices (after executing ΔT), and as such, the observation upon the detection screen is deterministic. If the location information is not extracted, then the patterns on the detection screen are a reflection of the available future choices of the particle at the moment it detected the slit screen (before executing ΔT). Since there is choice, there is uncertainty. This uncertainty is observed upon the screen.

The moment photons detect the screen

Beam of photons

Reflection of the photon's immediate future options within unresolved space before ΔT is executed

Photon detector

Beam of photons

Reflection of the photon's deterministic past immediately after ΔT was executed

Processing event (ΔT)

To simplify, the reason behind the alternate behavior of the particle is the fact that the choice is made by those who execute the experiment to alter the experiment itself. There are two separate experiments executed with modified conditions involved, and so incoherent conclusions are observed.

Those two experimental results are not possible to be observed simultaneously because this would require resolving events through their past and their future at the same time. This is forbidden by every theory, including the QSE theory.

3.5 Thermodynamics
Thermodynamics is the mechanics of cosmic evolution.

3.5.1 Space interaction mechanics
During the state of vacuum individual space elements interacted only within their own vicinity. They were unaware of the rest of the universe and only communicated locally. Out of the creation event, the manifestation of initially simple blocks of information with locked properties (first generation particles) allowed for greatly

enhanced efficiency by diminishing the total required processing time (and therefore the necessary energy) to resolve the universe's events. Instead of a large number of individual interactions between space elements, a considerably smaller number of events between locked information blocks had to be processed.

Vacuum interactions   Particle interactions
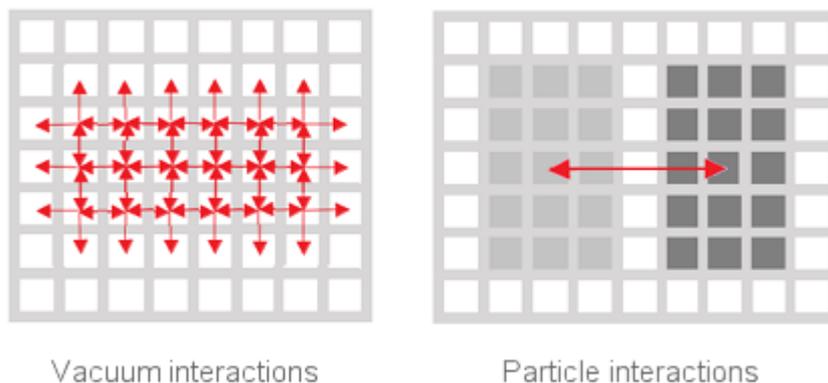
This event of enhanced efficiency propagated throughout the cosmos and ignited the creation event. As the evolution of the cosmos progressed, the frequency of the universe deteriorated by continuously supplying processing energy into the system. Retardation introduced growing stability. This allowed for more complex information blocks to develop (next generation particles), which introduced further efficiency. This pattern repeated itself until information within space elements eventually condensed into what we refer to as massive particles. Such information clouds were forced to break away from typical behavior because their reach extended beyond their immediate vicinity through their secondary property; gravity. As such, vast regions of space acquired pre-defined properties directly linked to their hosts, allowing for advanced efficiency in space interactions within those regions.

At this stage space elements were no longer required to interact individually with each other. One cosmic language had developed and blocks of information interacted in efficiency, similar to words and phrases used in a human language. The universe's frequency had deteriorated enough to allow for vacuum to be stable and for complex macroscopic structures to materialize through superposition of microscopic information blocks (massive particles).

3.5.2 Mechanics of creation

At the origin of the cosmos space elements possessed no information. The universe resonated in maximum frequency because it had no content and all available energy was directed into oscillation. Every single pulse was invested in processing an absence of events in a severely under-saturated environment. Similar to a pump over revving in an empty tank and producing no work, space was at its most inefficient and unstable state (vacuum).

Within countless perturbations of vacuum interactions one symmetric event of incremental efficiency was spontaneously achieved (the first generation radiation particle). As such, its properties prevailed over those of the entire vacuum universe and propagated globally igniting the creation event. This brought the entire visible universe into existence. It was a cold start producing very little energy per unit

volume. The temperature of birth was very similar to today's observed cosmic microwave background radiation because space does not expand and so it does not cool significantly. The structure of this cosmic event relates to patterns of thermodynamic efficiency propagation. This structure is still visible today in the form of large scale baryonic distribution observed as galaxy filaments. This type of structure is typical and commonly observed as the density distribution of thermodynamic efficiency if propagated within a near-perfectly (but not absolutely) homogenous medium.

3.5.3 Consequences
3.5.3.1 Law of efficiency
The natural flow of events is always the one which demands less processing time. This is universal and can be described as the law of efficiency.

3.5.3.2 Inertia
Fields, the secondary information clouds of complex particles, act like decelerating canopies. They force their hosts out of maximum oscillation and away from light speed. This is because field properties extend out from the host and introduce a secondary information cloud linked directly back into the host. This adds complexity in processing events and therefore the host's motion breaks out of cosmic frequency (out of light speed) since additional processing time is required to resolve events. Demand for processing time is against the law of efficiency and as such it is manifested as resistance to any change of state in order to preserve energy (processing time). This is understood as inertia.

3.5.3.3 Mass and Charge
Hosts with secondary information clouds (fields) display similar properties because of inertia forced upon them. Mass and charge are of similar nature because of their fields. Distinction between charge and mass is the consequence of the quantitative differences in the properties of their respective fields.

3.5.4 Local thermodynamics
A local event is a change of state of a closed system within a timeframe that does not involve cosmic frequency deterioration.

In terms of localized interactions the same principle applies. The natural flow of events is always the one which demands less processing time and therefore less energy dissipation between successive states of presence. This principle manifests itself as either deceleration of events in kinetics (for example the direction of heat flow) or condensation of information in potential (for example the direction of gravitational flow). In all cases ΔT diminishes as the natural flow of events. Another way of phrasing this would be that within a closed system and between two successive states of presence, the total available ΔT within the system diminishes

(slower kinetics, increased potential). Since ΔT is the available energy for processing events, the usable energy within closed systems always diminishes.

3.5.5 Forces
The direction of any force vector is the one which – if followed – would lead into the optimum path of diminished ΔT. Attraction occurs if the information properties of the entities involved are superimposed positively in which case saturation is enhanced. Repulsion occurs in negative superposition where saturation diminishes.

The magnitude of any force relates to the gradient of saturation differential within the region affected by the change of state, integrated per unit of volume if the saturation differential is non-linear or if the host or its field is irregular. This means that magnitude does not relate to the properties of the confined volume of space occupied by the host, but to the properties of the total region affected (host plus field). Forces are finite because fields extend out only to the point where space elements cannot detect further saturation differential. This is the region in space where information saturation linked to any host is no longer diminishing because it has reached the threshold of detectable differential. This threshold is a primordial property of space elements.

Since information saturation is inversely proportional to the rate of change of the affected space elements, fundamental forces are the physical manifestation of time-flow rate differential.

In gravity, a dense sphere hovering in space experiences the same gravitational force as an inflated balloon of equal mass because their gravitational fields extend out to an equal volume of space and so the Earth's gravitational differential experienced by both affected regions is the same. Time-flow rate is equally affected within the volume of space occupied by both host's secondary clouds (their gravitational fields), and therefore the forces experienced by both hosts are of equal magnitude.

Holding two magnetic rods at close range produces an experience of attraction or repulsion, depending on alignment. This is translated by human perception as an attractive or repulsive force. The pragmatic event being experienced is the consequence of the actual flow of time being locally accelerated (repulsion) or decelerated (attraction) between the magnets. Our hands holding those magnets are forced in or out by the flow of time itself. Time-flow rate differential between the magnets may be infinitesimal because it is short-ranged, but its gradient over the relative volume of space is considerably steeper than the gravitational gradient of all other parties involved (the rods, our fingers, the Earth, etc). As a result, the properties of the magnetic field's time distortion severely prevail over all other information within the region. This is experienced as magnetic force which prevails over gravity within the short range of magnetic influence between the rods.

Nuclear forces are of the same origin. Because nature can accommodate a large number of orders of magnitude smaller than known particles, it should not be unrealistic to assume that sub-atomic particles possess individual fields and, depending on their gradient of

saturation dissipation with distance from the host, they produce similar time-flow differentials which are manifested as nuclear forces. The properties of those forces depend on field superposition of all sub-atomic hosts (entities) within the affected region.

What is being suggested is that fundamental forces do not exist. They are not the result of particle exchanges. They are our (human) interpretation of the natural flow of events in the cosmos which is governed by a single one law; the law of efficiency. Fundamental forces are the physical manifestation of time-flow differential within the regions involved, which is an internal primordial property of quantum space elements.

4. VERIFICATION

4.1. Absolute reference frame

Motion is the quantum propagation of information through the static space elements grid. So there is an absolute frame of reference, the quantum space grid. Since this absolute frame of reference is invisible, one consequence of its existence would be an additional invisible velocity vector in the visible relative motion of bodies. An example would be an undefined velocity vector relating to the motion of our planet through space.

Special and General Relativity account for all known relative information between two massive entities allowing for accurate measurement of the gravitational force.

If it can be experimentally confirmed that the force of gravity is actually measured to fluctuate relative to Earth's rotations through space, this would indicate the existence of an undefined reference frame.

Fluctuations should be aligned with Earth's cycles. All the following conditions should be confirmed as periodic gravitational fluctuations:

- Earth's rotation around its axis
- Earth's rotation around the Sun
- Axis rotations relating to both the above

It is imperative that all the above conditions should be verified if indication of the grid's existence is to be substantiated. Specifically on the Earth's rotation around its own axis, the anticipated daily gravitational fluctuations should be more prominent in locations near the planet's equator and less visible closer to the poles, because of diminished tangential velocity.

Solar rotation around the galaxy would also account for gravitational influence, yet the time frame does not allow for conclusive results. Depending on the measurements' accuracy, galactic rotation may be ignored.

If measurements of the gravitational constant G can be accurate enough, and if they can indicate such periodic fluctuations outside the margin of error of instrumentation, then this would account as an *indication of validity* for the Quantum Space Elements proposal.

If indication of validity is observed, then more elaborate experiments could be performed using existing accelerators. Measuring gravity fluctuations around the ring, and throughout the acceleration curve, would perhaps provide more than just an indication of validity.

Note:
In QSE terms, the Earth's motion through the grid translates into different CT states according to the quantum relativity section. Those states are unaccounted for by the traditional methods used to calculate the value of G, since the absolute reference frame is ignored. According to QSE, Earth's orbits in space can be described as points moving in parallel along the Conscious and Absolute Time Lines and in an eternal cycle. Accurate experimentation techniques should be able to verify those unaccounted for fluctuations of CT as fluctuations of the gravitational constant G aligned with our planet's rotation cycles.

This would be because, as discussed in the Thermodynamics section, forces are the physical manifestation of time-flow differential. Any event that influences the ratio between CT & ΔT within absolute time, it produces a measurable consequence in the magnitude of forces within that particular frame of reference, because time-flow differential is affected. Orbital motion is a periodic event which affects time-flow within its own reference frame and, as a consequence, gravity should be influenced.

All observed orbits and rotations of any planet are relative to the absolute frame of reference of the space elements grid. They are reduced to being the components of an absolute resultant velocity vector. The magnitude and direction of this velocity vector are periodically affected by the planet's rotational motions. As a consequence, the magnitude and direction of the gravitational force at any location on a planet are similarly affected as described in the above paragraph. Such a consequence can only materialize if there actually exists an undefined absolute frame of reference within which kinetics and potential events are forced to co-exist and interrelate.

If gravitational fluctuations prove to align with the above anticipations, they should be geometrically investigated in order to re-construct the absolute velocity vector and define the absolute frame of reference. The effect of rotational motion on the direction of gravity swaying away from the center of mass of the planet is indirectly related to frame dragging and may be too subtle to be observed. It relates to asymmetries forced upon gravity due to the invisible motion differentials of the gravity field itself relative to the absolute reference frame. This proposed verification method focuses only on magnitude fluctuations observed as orbital consequences on the value of G.

The diagram below (click for animation) demonstrates this in a somehow exaggerated version for the sake of clarity. In reality the displacements within the curves are almost undetectable, since the orbital velocity of planets is incomparable to light speed and therefore to the frequency of the universe. The CT differential is very small at those speeds, but not zero.

Orbital motion through the Absolute Reference Frame of Quantum Space Elements
(Quantum Relativity)
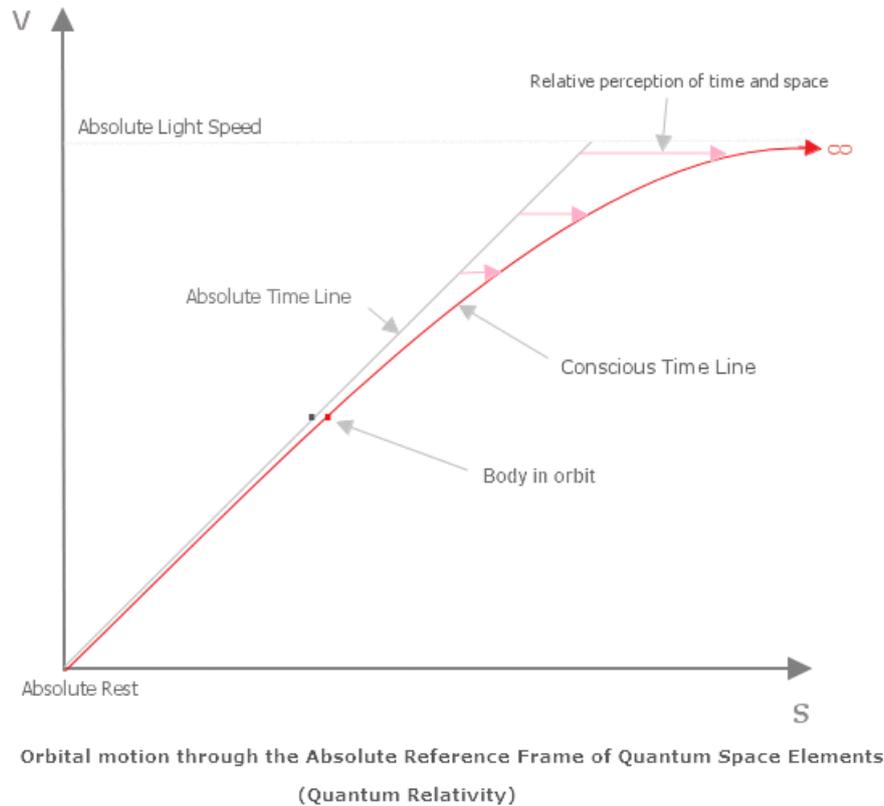
4.2 Time Geometry (quantized time)
According to the discussion in the quantum relativity section, the necessary transition time between any two events occurring in the universe (ΔT) manifests itself at velocities close to the speed of light. This is because only at this speed CT diminishes and becomes comparable to ΔT. When those two dimensions of time (ΔT & CT) get to be of similar order of magnitude, then the apparent linearity of events (the continuous flow of events) should break down. Experimentally observing events materializing at such special conditions should produce a non-continuous flow.

More specifically, an experiment measuring the actual speed of accelerating particles (the actual distance travelled over time and not the inferred speed through energy gained), would at some point observe further acceleration in quantized steps as opposed to a continuous flow asymptotic to light speed. Such an observation would produce evidence of quantized time and ΔT; the undetected dimension of time.

What is being suggested is that the particle's energy is not linearly related to its speed. Energy is stored within the particle before it is translated into speed in quantized steps. These steps are detectable only at relativistic speed, which means

only at the special condition of events materializing at a frequency that is fast enough to be comparable to the frequency of the universe.

Executing this experiment would require a dense grid of observations each at different values of energy gained plotted against actual speed. If an even increase of energy gained is observed to produce an uneven acceleration curve, this should be attributed to quantized time.

If a detector could produce one "ping" every time a particle or a particle beam passed through, then the distance travelled would be the circumference of the accelerator and the time to complete each circle would be the frequency of those "pings". If the variation of this frequency is not perfectly aligned with the energy gained by the particles, but is observed to be quantized (and therefore delayed) in response to the energy gained, then this experiment would have produced a strong indication of the quantized nature of time.

Factoring this frequency down to audible levels and feeding it through a loudspeaker would produce an interesting experience to those observing the experiment. A continuous increase in energy would produce a discontinuous escalation in pitch. Humans would have, for the first time, actually sensed the effect of cosmic time flow.

Graphically, the plots of observations should look similar to the diagram below. Since ΔT is of unknown magnitude it is not possible to estimate the speed above which quantized time would become detectable. Most certainly this would be very close to the speed of light and therefore close to the limits of accelerators. This diagram is indicative and may exaggerate the effect of quantized time in the motion of particles and at speeds that can be experimentally achieved. Depending on the density of the observational grid and on the accuracy of the experiment, quantized time should be detectable within the current limits of attainable velocities.

Energy gained and actual speed of accelerated particles
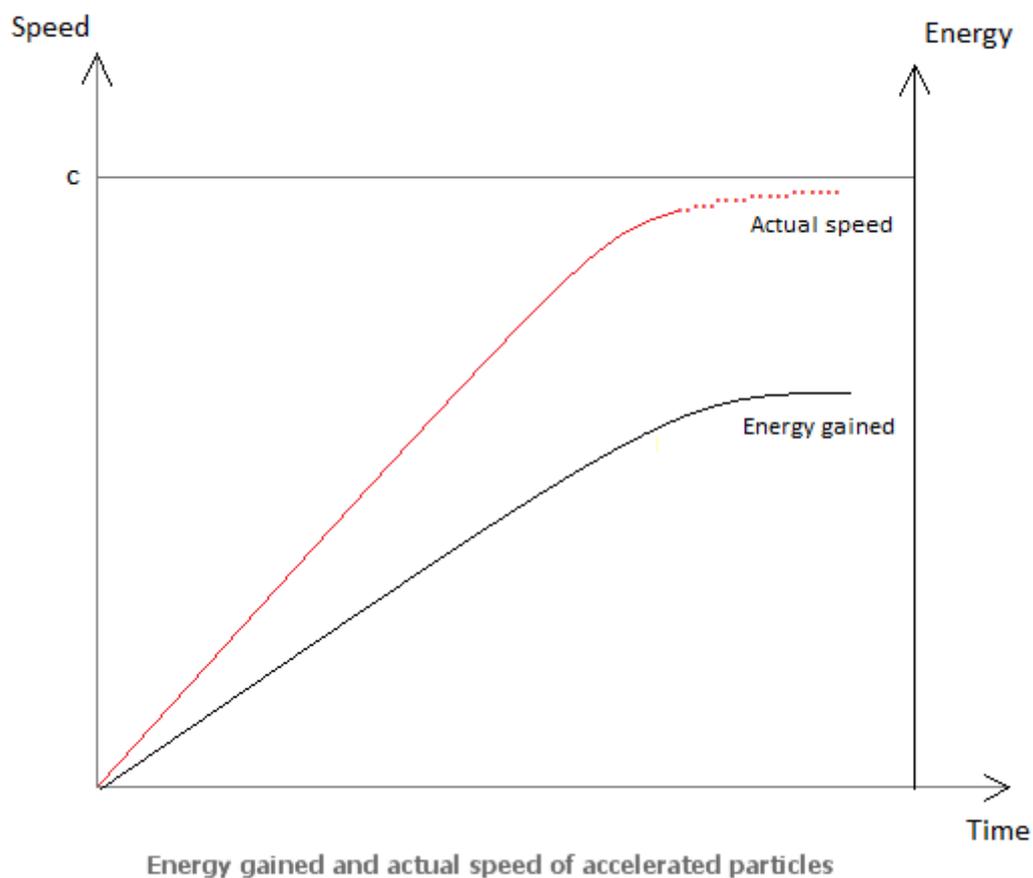
4.3 Active Fields (inertial manipulation)

This experiment investigates the effect of field superposition on the inertial mass and the passive gravitational mass of the host generating those fields.

An electric field generated by a uniform spherical charge distribution would be radial and directed away from the center of the sphere. The active gravitational field of the sphere propagates in similar fashion. Even though the fields are quantitatively very different, their superposition should not be negligible in the host's (the sphere's) inertial mass.

This would be because, according to the proposed concepts of QSE theory, inertia is the consequence of either gravity or electromagnetic field, or both, if they exist simultaneously and in connection to the same host. Each field would introduce additional information into the space elements affected by that field and therefore would increase or decrease the total ΔT required in resolving the space interactions within the fields, depending on positive or negative superposition of the relevant information. This would manifest as increasingly delayed or more immediate response to any change of state of the host and therefore as a measurable change in the host's inertia.

The superposition of the two fields would not alter the gradient of saturation differential of the Earth's gravitational field within the volume of space occupied by them. It is therefore anticipated that the observed passive gravitational force acting upon the sphere would not be affected and would remain constant throughout the experiment. The superposition of the sphere's fields would only affect its inertia and its active gravitational field. The later cannot be gauged and so the experiment focuses only on inertia.

If the spherical mass hangs freely from a spring, the strain measured at rest relates to the passive gravitational force applied on the sphere and its gravitational field by Earth's gravity. If a brisk upward force is applied to the sphere through that same spring, the strain gauged before the sphere begins to move upwards would be proportional to the sphere's inertia.
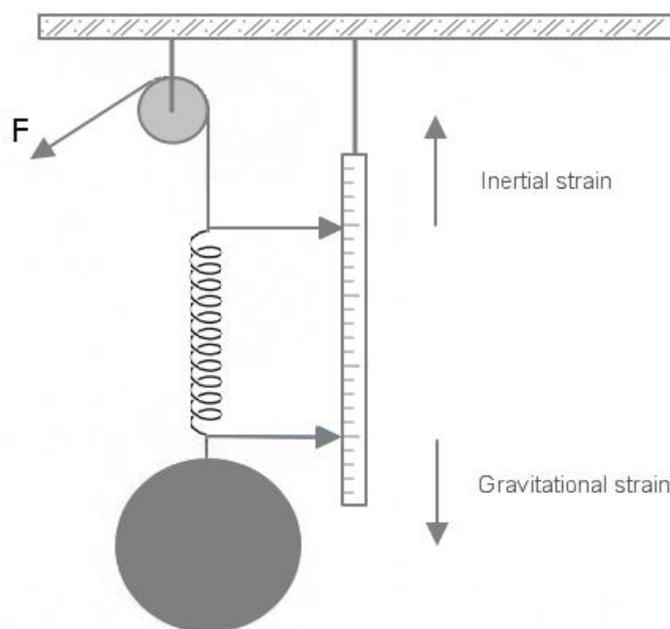
Inertial mass and gravitational mass experiment

Repeating this experiment at different levels of charge and until the sphere is fully charged, it should produce an observation of constant passive gravitational strain and of a gradually increased or decreased inertial strain. Such observation would allow for differentiating between passive gravitational mass and inertial mass, and would therefore indicate validity of the QSE proposal.

The anticipated difference should actually be negative; meaning that superposition of the fields should result in negative superposition of the space elements' information saturation and should therefore decrease the host's inertia irrespectively of positive or negative charge used. This derives from already observed reaction of massive hosts when subjected to magnetic fields (diamagnetism), because they are repelled by those fields in all cases. Gravitational and electromagnetic fields seem to be negatively superimposed, diminishing the saturation of the affected space elements

and therefore allowing for accelerated rate of change (accelerated time-flow) within the affected region of space.

In the case of successfully executing this experiment and if observed results are aligned with the above anticipations, then deeper understanding of quantum space properties and interactions would allow for inertial manipulation of massive hosts by human-introduced artificial fields. The energy required to entirely eliminate the inertial mass of a neutral (not charged) host would be equal to the energy of the active gravitational field generated by the host. It would be reasonable to assume that the total active gravitational energy of the sphere is equal to the effective energy of the induced electric field (total energy fed into the sphere minus experimental inefficiencies) multiplied by the ratio of the inertial differential observed (click for animation).

This experiment should be executed in an environment with as little third party information as possible. Optimally, it should be executed in space. This would facilitate detection of the inertial strain differential since it is anticipated to be very subtle; perhaps even undetectable under the influence of the Earth's surface gravity. If the sphere's surface weight is 1kN and the experiment was executed at a location in space where the weight was reduced to 1N, then the experiment's sensitivity would have been multiplied by a factor of 1,000 times. If the weight was further reduced to 0.001N, the sensitivity would be enhanced by one million times. This should be enough to allow for detection of the differential between passive gravitational mass and inertial mass.

4.4 Retardation

It is redshift that holds the key to verifying retardation. Time-flow rate is invisible and so it cannot be observed directly. It must be mathematically inferred by the following process:

Observation: The current observational evidence available is cosmological redshift.

Interpretation: In 1929 science was more than ready (and perhaps eager) to accept the solution of expanding space. Observations indicating expanding space were aligned with theoretical necessity. There was little room for second thought. It is now 2018 and for the purpose of this discussion space is to be treated as a constant. The convenience of expanding space must be abandoned.

Reconstruction: All available images of old (distant) universe are distorted because of redshift. Standard models reconstruct those images by assuming expanding space. If this solution is abandoned, there aren't many available options to use as variables. Energy dissipation (tired light) has already been unsuccessfully considered.

If those distorted images of distant galaxies were mathematically reconstructed by use of time variables (instead of space or energy variables), then perhaps galaxies would have to rotate faster in the distant past. Every periodic event would have to be accelerated. Cosmic constants would become time-dependent.

It is understood that even if proposed time deterioration is mathematically coherent, this would still be just an indication; an alternative solution bound by its own assumed conditions. However, this indication would be a good place to start.

5. CONCLUSIONS

There can be no conclusions unless some indication of validity is experimentally observed.

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This proposal was derived entirely from first principles. The author is not a physicist and he does not follow the evolution of modern science. The background used within the proposal originates from the following bibliography to which the author was exposed as a student in the '90s.

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APPENDIX

Quantum Relativity Proof

Traditional Relativity assumes space-time continuum and no transition time between events. Proposed Quantum Relativity assumes quantized time and space, and introduces the concept of undetected processing time (ΔT) between events. Readers are encouraged to familiarize themselves with the complete QSE proposal before contemplating the following considerations.

The thought experiment
An observer at absolute rest has synchronized clocks with a traveler with horizontal speed v and with a photon shot at vertical speed c. At the point of origin (O) all three clocks are set to zero.

The clocks are typical and only register conscious time flow. All clocks ignore the ticks of ΔT and only register the ticks of CT in their respective frame of reference.

- The observer at rest registers absolute universal time t because he remains motionless throughout the experiment and so all his time is CT. There are no transition events materializing and consequently his ΔT = 0.

- The traveler registers CT only as a fraction of total absolute time because he is in motion and transition time ΔT is required. His clock is running behind the clock of the observer. The traveler's clock will tick numerical time equal to the observer's absolute time at t' = t + ΔT.

- The photon registers no time flow because it travels at light speed. Its motion is aligned to the frequency of the universe, therefore all pulses are forced to be transition time ΔT.

The following diagram captures three snapshots of events:

Quantum Relativity Diagram
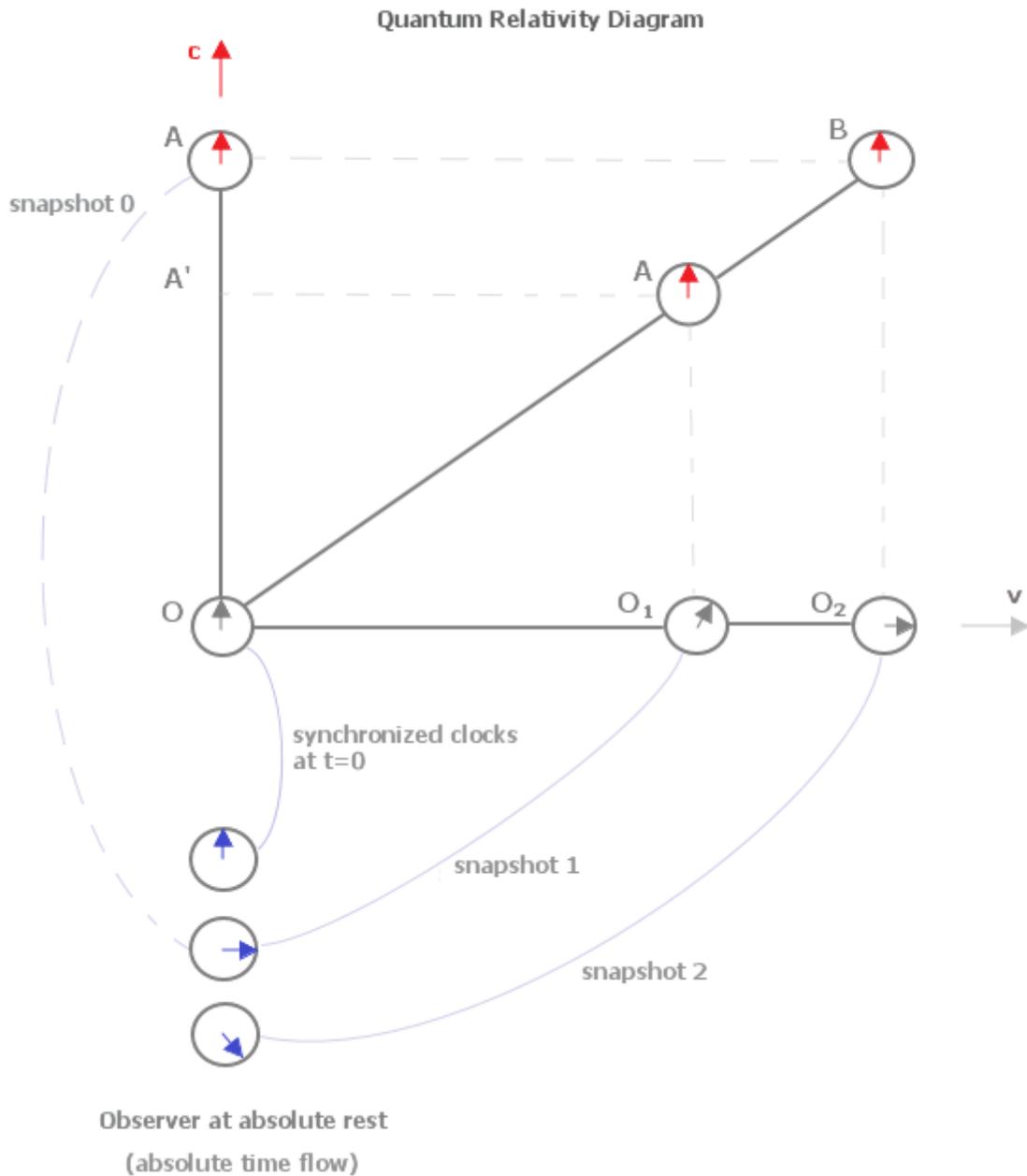
Snapshot 0:
The photon is shot vertically upwards by the observer at the origin (O). There is no other motion involved and so at absolute time t, the distance travelled by the photon is OA = ct. The time registered on the photon's wrist watch is zero, because all ticks are ΔT.

Snapshot 1:
The photon is shot vertically upwards by the traveler at origin (O). The traveler's horizontal velocity is v. At absolute time t:
- The traveler finds himself at location O1 and the photon at location A on the diagonal.
- The photon has travelled vertical distance O_1A which is less than OA, and a total diagonal distance OA which is equal to the vertical distance OA = ct, because light speed is absolute and constant in reference to the quantum space grid.
- In respect to the traveler, the photon has only travelled vertical distance O_1A.

- The traveler's wrist watch has registered less time than absolute time t since all ticks of ΔT have been ignored. His wrist watch displays time t_1 = t - ΔT.
- According to the traveler's frame of reference, light speed on the vertical axis is still c, even though the pragmatic vertical speed of the photon is less than c.

Snapshot 2:
- The traveler's location is O_2 and his wrist watch has registered time numerically equal to t.
- The actual time elapsed (absolute time) is t' = t + ΔT.
- The traveler is looking at the photon to have travelled vertical distance O_2B, which is equal to the original vertical distance OA, and so he understands light speed to be constant at c, even though the vertical speed of the photon is less than c.
- The photon is at location B having travelled an actual diagonal distance OB longer than OA, because it has been traveling at constant speed c for longer absolute time t' = t + ΔT.

Calculations
Resolving the geometry produces the following familiar result:

$$(OB)^2 = (O_2B)^2 + (OO_2)^2 \rightarrow$$

$$(ct')^2 = (ct)^2 + (vt')^2 \rightarrow c^2t'^2 = c^2t^2 + v^2t'^2 \rightarrow c^2t^2 = c^2t'^2 - v^2t'^2 \rightarrow$$

$$c^2t^2 = t'^2 (c^2 - v^2) \rightarrow \frac{t^2}{t'^2} = 1 - \frac{v^2}{c^2} \rightarrow \frac{t}{t'} = \sqrt{1 - \frac{v^2}{c^2}} \rightarrow$$

$$\frac{t'}{t} = \frac{1}{\sqrt{1 - \frac{v^2}{c^2}}} = \gamma$$

Considerations
At snapshot 2, as mentioned earlier, t' = t + ΔT and therefore t = t' − ΔT. Substituting for t produces the following:

$$\frac{t'}{t' - \Delta T} = \gamma \rightarrow \frac{t'}{\gamma} = t' - \Delta T \rightarrow \Delta T = t' - \frac{t'}{\gamma} \rightarrow \Delta T = t'(1 - \frac{1}{\gamma})$$

- At absolute rest γ=1 and therefore ΔT = t'(1-1) = 0, which is consistent with QSE theory since, for the observer at rest, all pulses are CT and none is ΔT.

- At light speed γ=∞ and therefore ΔT = t'(1-0) = t', which is also consistent with QSE theory because at light speed all pulses are ΔT or the photon would not have been traveling at the frequency of the universe. No conscious time was registered by the photon.

Reflections

- The physical interpretation of this Quantum Relativity proposal is that time dilation is an illusion forced upon travelers and not an actual physical occurrence. Undetected time quanta introduce an unrealistic perception of events.

- Traditionally assumed invariance forces a photon traveler to consciously exist instantly everywhere and forever. This is obviously unacceptable. Light speed invariance is not pragmatic but only an interpretation of reality. This is because the complete information on reality is undisclosed since some parts of it remain hidden; undetected.

- It could be argued that processing time between events (ΔT) had always been inferred by the expressions of special relativity if looked upon through the following angle:

$$\gamma = \frac{t'}{t' - \Delta T} \rightarrow \Delta T = t'(1 - \frac{1}{\gamma})$$

Note:
ΔT stands for the sum of all pulses of ΔT relating to time flow in any particular frame of reference. It should be understood as $\Sigma_{\Delta T}$.

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