The Relativistic Space-Time
Perspective

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1.0 Introduction/Abstract

This paper formulates <u>additional</u> relativistic equations examining Dr. Einstein's deductions from a Relativistically Distorted Perspective. Equations derived from a theoretic ideal "non-Relativistic" velocity distorted in the same manner as length, time, and mass – into an apparent "Relativistic" velocity. Absolute velocity is a necessary <u>logic</u> component for all Relativity equations – its actual determination is unimportant. Relativity physics equations presume <u>ideals</u>. The equations that are formulated here examine the absolute/real (<u>no</u> <u>S</u>pecial <u>R</u>elativistic <u>P</u>erspective <u>D</u>istortion, noSRPD) velocity and use it to determine the distorted (<u>S</u>pecial <u>R</u>elativistic <u>P</u>erspective <u>D</u>istortion, or SRPD) velocity. For an observer moving at a Relativistic Speed, everything outside that traveller's immediate environment would appear sped up. That would include the traveller's movement through space: meaning an apparently higher Relativistic velocity.

Two equations developed in this paper show this relationship. Independent variables have <u>no</u> relativistic deformation [Velocity$_{noSRPD}$||Time], the dependent variable is |Time'| because of <u>relativistic</u> deformation. Existence/non-existence of ideal values for absolute non-relativistic velocity values are not contested, they are <u>indeterminate</u> real ideals. Velocity is one of the valid, theoretic ideals that Classic relativity (<u>all</u> of Physics) relies upon. Two examples of Relativistic Perspective equations are:

$$\text{Time'} = \text{Time}/(1 - \text{Velocity}_{noSRPD}{}^2/c^2)^{\frac{1}{2}}$$

This paper reasons an inverse relationship: when an independent variable is the observed velocity from the Relativistically Distorted viewpoints. The parallel equation from that relativistic perspective is:

$$\text{Time} = \text{Time'} /(1 + \text{Velocity}_{SRPD}{}^2/c^2)^{\frac{1}{2}}$$

Time' is the increase in Time units passing on an undistorted Clock, but observed from the distorted viewpoint. |Time| is what the value would be were there no distortion. The above relationship allows for the additional development of eight formulae/equations for the velocity, mass, time, and linear deformations.

Relativistic perspective equations have been confirmed to be consistent with the Classic equations to 2000 significant digits for 37 velocity values ranging from 1.0E-500m/s to (c – (1.0E-500))m/s.

<u>2.0 Relativistically Distorted vs. Non-Relativistically Distorted Velocities</u>

Special Relativistic Perspective Distortion (SRPD) determines the dependent velocity variable from the perspective of the moving object and how it compares to the outside, undistorted environment.

This relationship is derived from the time equation. 'Real' labels are based on approximations. Because all observable objects in the universe are in motion, determining an exact or zero velocity from outside observations is impossible; an <u>exact</u> relativistic effect is indeterminate. <u>Real</u> labels are theoretical concepts, not confirmable data. But the relationship between relativistic||non-relativistic values is deducible. In the Classic time distortion equation:

c – the speed of light [299,792,458 m/s]

Time – Real seconds passing for any defined event

Time' – Real seconds passing for the same event on a body under Special Relativistic distortion

$Velocity_{Real}$ – Observed velocity from a real-time/no-Special-Relativistic-distortion viewpoint

$$Time' = Time/(1-Velocity_{Real}^2/c^2)^{\frac{1}{2}}$$

|Time| seconds are the number of real seconds passing in which neither the viewer or viewed were distorted. |Time'| seconds are the greater number of <u>real</u> seconds observed from the distorted viewpoint for a known action on a Relativistically distorted object. If the object were moving, from an outside perspective, exchange of gluons and their propagation velocity would slow down, but the velocity of the object would not change. Current thinking is that from moving object's perspective time would not slow down for a viewpoint within the distorted object – that slowdown would mean that objects/actions <u>outside</u> the distorted object would speed up – including its passage through space.

An alternative would be to relate the number of seconds/time units passing on the distorted object. Assuming any numerically defined speed means you assume a zero velocity; 'Real' velocity is defined with respect to an immobile point – a theoretic ideal velocity measured from a

point with no Relativistic distortion. As far as we know now, that would be an "impossible deal to close": it is an ideal that simply cannot be attained. But it is what all such ideals require: it is simply conceivable and a methodology developed for achieving that ideal.

Alternately, define two new variables, recognising the relativistic second as the inverse of a real second. As well, be more specific about the |Velocity| variable, defining it not as "Real" but as velocity undistorted by Relativistic effects. It is a reuse of that time-honoured strategy used in Physics mathematic reasoning – presumption of an ideal. Denial of that premise would lead to the discard of many motion, gravity and even Chemical reactions (relying on moles). Fewer relativistic seconds pass for any given number of real/non-relativistic seconds once distortion has begun. Defining the inverse equation would use the S̲pecial R̲elativistic P̲erspective's D̲istortions; the S̲R̲P̲D̲ Time perspective, the independent velocity variable would use the non-Relativistically distorted SRPD time values. It is legitimate to have both relativistic (distorted) and non-relativistic (undistorted) values in any equation provided they are the same on both sides (o̲n̲l̲y̲ relativistic seconds and o̲n̲l̲y̲ real metres are measured).

$\text{Time}_{\text{noSRPD}}$ - Relativistic/SRPD seconds passing from an SRPD viewpoint when that viewpoint is under no other distortion – the inverse parallel to the |Time| variable.

$\text{Time}_{\text{SRPD}}$ - Relativistic||SRPD seconds dependant on the velocity and the distortion it creates from an SRPD viewpoint.

$\text{Velocity}_{\text{noSRPD}}$- undistorted velocity measured from a SRPD viewpoint with a zero distortion factor

The value of $\text{Velocity}_{\text{noSRPD}}$ would be parallel to the value of $\text{Velocity}_{\text{Real}}$ – the velocity perceived from a relativistic viewpoint under no distortion. So presume a measurement of an EM signal velocity on a body n̲o̲t̲ The $\text{Time}_{\text{noSRPD}}$||$\text{Time}_{\text{SRPD}}$ equation would be the inverse of the Classic one, so:

$$\text{Time}_{\text{SRPD}} = \text{Time}_{\text{noSRPD}} * (1 - \text{Velocity}_{\text{noSRPD}}^2 / c^2)^{\frac{1}{2}}$$

Velocity is inversely related to the passage of time. So dividing both sides by 1 real/noSRPD metre would mean the equation could determine relativistic/non-relativistic velocity instead of the time distortion.

$$Time_{SRPD}/(1m_{noSRPD}) = (Time_{noSRPD}/(1m_{noSRPD}) * (1-Velocity_{noSRPD}^2/c^2)^{1/2}$$

Invert the equation:

$$1m_{noSRPD}/Time_{SRPD} = (1m_{noSRPD}/Time_{noSRPD}) / (1-Velocity_{noSRPD}^2/c^2)^{1/2}$$

Set the $Time_{noSRPD}$ variable:

$$Time_{noSRPD} = 1m_{noSRPD} /Velocity_{noSRPD}$$

So,

$$Velocity_{noSRPD} = 1m_{noSRPD} /Time_{noSRPD}$$

Then another expression of the equation:

$$1m/Time_{SRPD} = Velocity_{noSRPD} / (1-Velocity_{noSRPD}^2/c^2)^{1/2}$$

Define $Velocity_{SRPD}$ in parallel to $Velocity_{noSRPD}$:

$Velocity_{SRPD}$ – One noSRPD metre divided by the SRPD time value to travel that metre; a Relativistic Perspective velocity increasing at the rate time slows

Thus, Equation 1, the founding principle of Relativistic Perspective:

$$Velocity_{SRPD} = Velocity_{noSRPD} / (1-Velocity_{noSRPD}^2/c^2)^{1/2} \qquad \text{Equation 1}$$

Everything in the universe has a velocity. Defining a point at rest is impossible, so determining the speed of light is done from a viewpoint assumed to have Planck level/zero relativistic distortion – a valid scientific presumption.

So examine relativistic distortion from a theoretical perspective under no/zero special relativistic distortion (noSRPD). Zero velocity may be indeterminate, but it is not mathematically indefinable. 'F=ma' is an idealised proposition, as all the forces acting upon a body cannot be determined perfectly. However, these forces can be estimated with some inaccuracy. Even more crucially, when Newton wrote the 'F=ma' law, he presumed there was a single acceleration vector. Two equal forces moving against a single object with opposite vectors would mean the body would not accelerate – but force would be acting on object.

The SRPD equations are derived from the time equation, using an <u>Absolute</u> (or "Real") velocity with no Relativistic distortion. Classic Special Relativity presumes real values are values observed from a theoretic zero velocity. All observable objects in the universe are in motion. The maximum real velocity in our reality is <u>c</u> (299,792,458 m/s): defined by moving 1 Planck length in a single Planck time passage:

Maximum Velocity = Planck Length / Planck Time

Maximum Velocity = $(\hbar G/c^3)^{\frac{1}{2}} / (\hbar G/c^5)^{\frac{1}{2}}$

Maximum Velocity^2 = $(\cancel{\hbar G}/c^3) / (\cancel{\hbar G}/c^5)$

Maximum Velocity^2 = $(1/c^3) / (1/c^5)$

Maximum Velocity^2 = c^2

Maximum Velocity = c

If Planck constants are a determinant of <u>maximum</u> velocity, a reasonable postulate would be the inverse were the <u>minimum</u>:

Planck Velocity = 1/c = 3.3355338153E-9

An imaginary Planck accurate timing device could measure its movement by a three-dimensional rotation, surveying all observable objects. Objects perpendicular to the motion of the moving point would display a linear distortion. The observing device [O.D.] would then exert a thrust parallel to that distortion. The O.D. would then measure increased linear distortion, the opposite happening with a decrease in the velocity. A careful measurement of all visible objects for any change in their distortion – and eventually a point would be reached where any movement in any

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direction would increase the distortion.

The described experiment is impossible methodologically, but it is a valid <u>ideal</u>. Measurement of velocity from that point would give a 'real' velocity.   Though the O.D.'s zero velocity point would only be for the moment it was marked. Movement of objects around the O.D. would change General relativistic distortions, twisting the shape of space-time. It would be a very theoretical but a <u>valid</u> ideal zero velocity. Mr. Newton's 'F=GMm/r^2' is another ideal: presuming exact formulaic measurements of only two bodies with no outside intrusions. That condition does not exist anywhere in reality. But those inaccuracies do not invalidate either equation.

There are only two variables in Equation 1. We can invert the equation, making Velocity$_{noSRPD}$ the <u>dependent</u> variable, by squaring both sides of the equation:

$$\text{Velocity}_{SRPD}{}^2 = \text{Velocity}_{noSRPD}{}^2/(1 - \text{Velocity}_{noSRPD}{}^2/c^2)$$

Multiply with $|(1 - \text{Velocity}_{noSRPD}{}^2/c^2)|$:

$$\text{Velocity}_{SRPD}{}^2 * (1 - \text{Velocity}_{noSRPD}{}^2/c^2) =$$
$$\cancel{(1 - \text{Velocity}_{noSRPD}{}^2/c^2)} * (\text{Velocity}_{noSRPD}{}^2/\cancel{(1 - \text{Velocity}_{noSRPD}{}^2/c^2)})$$

Expand $|\text{Velocity}_{SRPD}{}^2 * (1 - \text{Velocity}_{noSRPD}{}^2/c^2)|$:

$$\text{Velocity}_{SRPD}{}^2 - \text{Velocity}_{SRPD}{}^2 * \text{Velocity}_{noSRPD}{}^2/c^2 = \text{Velocity}_{noSRPD}{}^2$$

<u>Add</u> $|(\text{Velocity}_{SRPD}{}^2 * \text{Velocity}_{noSRPD}{}^2/c^2)|$ to both sides of the equation:

$$(\text{Velocity}_{SRPD}{}^2 - \cancel{\text{Velocity}_{SRPD}{}^2 * \text{Velocity}_{noSRPD}{}^2/c^2}) + (\cancel{\text{Velocity}_{SRPD}{}^2 * \text{Velocity}_{noSRPD}{}^2/c^2}) =$$
$$\text{Velocity}_{noSRPD}{}^2 + \text{Velocity}_{SRPD}{}^2 * \text{Velocity}_{noSRPD}{}^2/c^2$$

Simplify the $|\text{Velocity}_{noSRPD}{}^2 + \text{Velocity}_{SRPD}{}^2 * \text{Velocity}_{noSRPD}{}^2/c^2|$ expression:

$$\text{Velocity}_{\text{SRPD}}{}^2 = \text{Velocity}_{\text{noSRPD}}{}^2 * (1 + \text{Velocity}_{\text{SRPD}}{}^2/c^2)$$

Divide with $|(1 + \text{Velocity}_{\text{SRPD}}{}^2/c^2)|$ on both sides,

$$\text{Velocity}_{\text{SRPD}}{}^2 / (1 + \text{Velocity}_{\text{SRPD}}{}^2/c^2) =$$
$$(\text{Velocity}_{\text{noSRPD}}{}^2 * \cancel{(1 + \text{Velocity}_{\text{SRPD}}{}^2/c^2)}) / \cancel{(1 + \text{Velocity}_{\text{SRPD}}{}^2/c^2)}$$

So

$$\text{Velocity}_{\text{noSRPD}}{}^2 = \text{Velocity}_{\text{SRPD}}{}^2/(1 + \text{Velocity}_{\text{SRPD}}{}^2/c^2)$$

Take the square roots:

$$(\text{Velocity}_{\text{noSRPD}}{}^{\cancel{2}})^{\cancel{\frac{1}{2}}} = (\text{Velocity}_{\text{SRPD}}{}^{\cancel{2}})^{\cancel{\frac{1}{2}}} / (1 + \text{Velocity}_{\text{SRPD}}{}^2/c^2)^{\frac{1}{2}}$$

And

$$\text{Velocity}_{\text{noSRPD}} = \text{Velocity}_{\text{SRPD}} / (1 + \text{Velocity}_{\text{SRPD}}{}^2/c^2)^{\frac{1}{2}} \qquad \text{Equation 2}$$

The above was confirmed using the equation $|\text{Time'} = \text{Time}/(1 - \text{Velocity}_{\text{noSRPD}}{}^2/c^2)^{\frac{1}{2}}|$ to calculate the relativistic velocity by multiplying the noSRPD velocity by the proportion Time/Time'. The range of real [noSRPD] velocities was from 1.0E-500 m/s to c – (1.0E-500) m/s. The apparent (SRPD) velocity is immediately observable. Equation 2 is the logical inverse to Equation 1: $\text{Velocity}_{\text{SRPD}}$ the independent variable and $\text{Velocity}_{\text{noSRPD}}$ the <u>dependent</u> one.

The velocity equations have another form by dividing both sides of Equation 1 with $|\text{Velocity}_{\text{noSRPD}}|$:

$$\text{Velocity}_{\text{SRPD}} / \text{Velocity}_{\text{noSRPD}} = (\cancel{\text{Velocity}_{\text{noSRPD}}}/(1 - \text{Velocity}_{\text{noSRPD}}{}^2/c^2)^{\frac{1}{2}}) / \cancel{\text{Velocity}_{\text{noSRPD}}}$$

Then inverting:

$$\text{Velocity}_{\text{noSRPD}}/\text{Velocity}_{\text{SRPD}} = (1 - \text{Velocity}_{\text{noSRPD}}^2/c^2)^{\frac{1}{2}}$$

Doing the same with Equation 2

$$\text{Velocity}_{\text{noSRPD}} / \text{Velocity}_{\text{SRPD}} = ((\cancel{\text{Velocity}_{\text{SRPD}}}/(1 + \text{Velocity}_{\text{noSRPD}}^2/c^2)^{\frac{1}{2}})/ \cancel{\text{Velocity}_{\text{SRPD}}}$$

Again inverting:

$$\text{Velocity}_{\text{SRPD}}/\text{Velocity}_{\text{noSRPD}} = (1 + \text{Velocity}_{\text{SRPD}}^2/c^2)^{\frac{1}{2}}$$

These proportions means that the expressions $|(1 - \text{Velocity}_{\text{noSRPD}}^2/c^2)^{\frac{1}{2}}|$ and $|(1 + \text{Velocity}_{\text{SRPD}}^2/c^2)^{\frac{1}{2}}|$ can be interchanged.

Gravitational and Special Relativistic distortion form part of all reality. Velocity$_{\text{Real}}$ values used in any relativistic equation are **approximate**. Terms should not be relativistic and real, but relativistic and non-relativistic. Any observed velocity is as valid as a relativistic velocity. The sole issue is the precision of the value. For lower velocities, employ 'noSRPD', higher velocities, and the value of 'SRPD' for conversion to non-relativistic values. Though neither measurement will be precise.

The above thought experiment presumes undistorted measurements, presumed ideals. A valid zero velocity will always be an unreachable ideal, because impossibly precise observations would be necessary to survey objects to use their special relativistic distortion in relation to ours. Gravitational distortions complicate the situation further. Sufficient data may be a theoretically reachable goal, but gathering such data would require multiple observation points in distinct and separate (on an intra-galactic scale) locations. There is also the difficulty of moving a sophisticated observation device at a relativistic velocity for observations of distortions from the relativistic viewpoint. This velocity would distort different variables in different ways. The most obvious examples are the mass of the matter and the velocity of boson particles. The matter would increase in mass, but bosons would decrease in velocity and mass. The

relationship between the two quantities would become dysfunctional. The elements would dissemble to their component protons, neutrons and electrons, because the gluons could be weakened to an infinitesimal degree. The repulsive force of the positive charge would weaken to the same degree, but mass of the nucleons together would <u>increase</u> accordingly. Thus, any passengers aboard a vessel moving at a relativistic velocity would find themselves both gaining weight and losing muscular force.

<u>2.1 Additional Relativistic Equations</u>
The Relativistic Perspective velocity formulae can be used to deduce the conditions for bodies in terms of time, length, and mass. All Relativistic and non-relativistic ratios are the same, so the velocity distortion equation allows development of additional relativistic equations. The $(\text{Velocity}_{SRPD}/\text{Velocity}_{noSRPD})$ ratio is identical to the relativistic $|(1-\text{Velocity}_{noSRPD}^2/c^2)^{\frac{1}{2}}|$ expression.

The Classic time distortion equation, in Relativistic Perspective form:

$$\text{Time'} = \text{Time}/(1 - \text{Velocity}_{noSRPD}^2/c^2)^{\frac{1}{2}}$$

Replace $(1 - \text{Velocity}_{npSRPD}^2/c^2)^{\frac{1}{2}}$:

$$\text{Time'} = \text{Time}/(\text{Velocity}_{SRPD}/\text{Velocity}_{noSRPD})$$
$$\text{Time} = \text{Time'}*(\text{Velocity}_{SRPD}/\text{Velocity}_{noSRPD})$$
$$\text{Time} = \text{Time'}/(\text{Velocity}_{noSRPD}/\text{Velocity}_{SRPD})$$

because
$$\text{Velocity}_{noSRPD}/\text{Velocity}_{SRPD} = (1 + \text{Velocity}_{noSRPD}^2/c^2)^{\frac{1}{2}}$$

Then,

$$\text{Time} = \text{Time'}/(1 + \text{Velocity}_{SRPD}^2/c^2)^{\frac{1}{2}} \qquad\qquad \text{Equation 3}$$

Or

$$\text{Time}_{noSRPD} = \text{Time}_{SRPD} * (1 + \text{Velocity}_{SRPD}{}^2/c^2)^{\frac{1}{2}}$$

The other equations have the same logical structure.

Mass$_{noSRPD}$ - Mass under no Special Relativistic distortion from an SRPD viewpoint

Mass$_{SRPD}$ - Mass with Special Relativistic distortion from an SRPD viewpoint

$$\text{Mass}_{SRPD} = \text{Mass}_{noSRPD}/(1 - \text{Velocity}_{noSRPD}{}^2/c^2)^{\frac{1}{2}} \qquad \text{Equation 4}$$

$$\text{Mass}_{SRPD} * (\text{Velocity}_{SRPD}/\text{Velocity}_{noSRPD}) = \text{Mass}_{noSRPD}$$
$$\text{Mass}_{SRPD} / (\text{Velocity}_{noSRPD}/\text{Velocity}_{SRPD}) = \text{Mass}_{noSRPD}$$
$$\text{Mass}_{noSRPD} = \text{Mass}_{SRPD} /(\text{Velocity}_{noSRPD}/\text{Velocity}_{SRPD})$$

Replace ($\text{Velocity}_{noSRPD}/\text{Velocity}_{SRPD}$)

$$\text{Mass}_{noSRPD} = \text{Mass}_{SRPD}/(1 + \text{Velocity}_{SRPD}{}^2/c^2)^{\frac{1}{2}} \qquad \text{Equation 5}$$

The Length equations:

Length$_{SRPD}$ - length of a body under special relativistic distortion from an SRPD viewpoint

Length$_{noSRPD}$ - length of a body under no relativistic distortion from an SRPD viewpoint

$$\text{Length}_{SRPD} = \text{Length}_{noSRPD} * (1 - \text{Velocity}_{noSRPD}{}^2/c^2)^{\frac{1}{2}} \qquad \text{Equation 7}$$
$$\text{Length}_{SRPD} = \text{Length}_{noSRPD} * (\text{Velocity}_{noSRPD} / \text{Velocity}_{SRPD})$$
$$\text{Length}_{noSRPD} = \text{Length}_{SRPD} / (\text{Velocity}_{noSRPD} / \text{Velocity}_{SRPD})$$
$$\text{Length}_{noSRPD} = \text{Length}_{SRPD} * (\text{Velocity}_{SRPD} / \text{Velocity}_{noSRPD})$$

Replace ($\text{Velocity}_{noSRPD}/\text{Velocity}_{SRPD}$)

$$\text{Length}_{noSRPD} = \text{Length}_{SRPD} * (1 + \text{Velocity}_{SRPD}{}^2/c^2)^{\frac{1}{2}} \qquad \text{Equation 8}$$

Velocity can <u>appear</u> to reach or exceed the speed of light from the moving body's viewpoint because of relativistic distortions. Distortions in observed bodies would be calculated with |

$$(1 + \text{Velocity}_{SRPD}^2/c^2)^{\frac{1}{2}}$$

 <u>Relativistic Perspective</u> equations determine the relativistic distortions from moving observation points.

The Einsteinian equations are more appropriate for low speeds. Motion is relative for any observation point; determining an exact 'velocity' is impossible. Alternately, if all observed objects exhibit a large blue shift (including a point where that shift was the greatest) that would indicate a need for Relativistic Perspective Equations. Relativistic perspective equations determine the appropriate relativistic values (for the velocity, time, mass, and length) from the corresponding non-relativistic values.

2.2 Other Consequences of Relativistic Distortion
The above equations suggest additional relativistic effects not completely recognised by science. Relativistic velocity would:

a) Slow the transmissions of all bosons: photons (light), gravitons (gravity), gluons (strong nuclear force) and the W/Z bosons (weak nuclear force). Bosons emitted by any moving object will be slowed down by those distortions, which would also have the effect of reducing the frequency. This slowdown would reduce the bosons' mass as well.
b) The relativistic effects would also increase the mass of the matter particles; the mass from the bosons would have to be transferred somewhere. This increase is defined by the Classic Relativity Mass equation.

The combination of the two points above would mean that any quantum-level interaction would be dealing with heavier particles with slower, reduced mass (and therefore, <u>weaker</u>) Bosonic forces. Time would not "slow down", the interactions that maintain the structure of any macro-

level device would slow down. All Bosons would slow down. The object would not function as it did at rest.

Mass of the individual particles would increase, while forces maintaining their quantum structures weakened. There would perhaps be an equal balance of weakening between the repulsive force of positive charged protons and the bonding force of Gluons.   Lessening of both forces would mean overall weakening of atomic structure. Increased particle mass would mean that they collided with greater kinetic force. With both the mass of matter particles at all quantum levels increasing and the Boson forces that maintain their structure slowing and decreasing/weakening in force/energy Reality would not function as it did at rest. One could examine the varying mass of subatomic particles and how that so very fundamentally changes the way they react with the Cosmos. Consider this: an object moving at approximately 2.59E8m/s would have a Relativistic effect of again, approximately 2.0. That would mean that the mass of all the matter particles would increase by a factor of 2. The Boson particles that were a gigantic factor in their interactions with one another would slow by the same factor. Because said Bosons can theoretically reach a zero velocity, it is reasonable to presume that their velocity and mass would decrease by the same factor. What that actual value would be in the energy of Boson particles is unimportant (though it may be a valid research project). The mass of the matter would double and the energy of the wave/particles that control their interactions would halve. Is it reasonable to say that such a distortion would be a simple slowdown in time? Or would it change the fundamentals of the forces that maintain the reality we observe? And the way that reality precedes.

The above assertion does not in any way contest the fundamental distortions of Dr. Einstein. It simply challenges how those distortions would affect our reality. As for the great "Time" debate about Relativity it aggressively does not take either side: in some respects it is as though time were slowing down. And in other respects, it is as though time proceeds exactly as it does at rest, proceed as it would were the quantum values of everything to change.

Alterations occurring at a non-relativistic level would change the fundamental quantum interactions, to a marginal degree. An observed relativistic scale recession velocity could alternately indicate relativistic scale distance and boson decay through matter interactions, not a

universal expansion: EM frequency decay over cosmological distances through the passage of extremely disperse matter clouds that are reasoned to exist throughout our reality. The frequency-decay supposition does not conflict with any conservation principles that are currently under consideration in science. Through the acceleration of the objects, a very fundamental <u>fact</u> of our observations has already been quantified: the Hubble Constant. That would mean an increase in the energy level of the Universe, with no limit or source for that increase. While the universe's expansion principle contests the one of the most fundamental principles in modern Science, matter/energy conservation, frequency decay does not. The EM decay through disperse matter would not be a absolute reduction of the energy in any EM signal, it would be its transformation into <u>kinetic</u> energy. The two lines of reasoning that would be with the alternate proposals:

a) The energy of the universe is increasing at an absolute (though un-harvestable) rate. Because this supposition sets absolutely no limit to the expansion, it is producing an infinite increase in energy/matter production.

b) Alternately, the energy we observe undergoes an inevitable frequency through passage through fantastically disperse inter-Galactic matter clouds. A "decay" over great distances in a fashion that we directly observe and are able to quantify with what is known in current science as the <u>Hubble Constant</u>, through passage through the fantastically disperse inter-Galactic matter clouds that we <u>know to exist</u>. The fact that we observe (or more accurately, <u>reason</u>) the change in Inter-Galactic structure throughout the Universe would have to mean that there is matter between all Universe structures. The matter could not transmit directly from one existing interstellar/intergalactic structure to contribute to changes or the actual genesis of new interstellar/intergalactic structure. It would be minimally observable throughout that transmission in the form of an extremely low intensity radiation. That radiation level would vary from location to location and from time to time, but surely it is reasonable to postulate that the overall differences average one another out. The Hubble shift is an absorption of a portion of the Universal EM, absorbing some of that energy, then radiating a slightly red-shifted copy of that EM. Over the course of Billions of years, the level of radiation produced through that action would stabilize in any area or time period. The changes that would inevitably come about in either of those would not vary over decades or centuries, but over millennia and

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c) The most recent value is for the Hubble Constant is 6.78E5 (m/s)/MPc. A Parsec is 3.085678E16 m, and hence, a Mega-Parsec is 3.085678E22 m. A reduction in frequency is brought about by a velocity of 6.78E5 (m/s)/MPc. The RATE of that decay can be calculated with what follows:

Δv – the apparent reduction in velocity

c - the speed of light (2.99 792 458E8m/s

d - the apparent distance increase

$\text{Hubble\_Frequency}_{Decay} = (\Delta v/c) / \Delta d$

$\text{Hubble\_Frequency}_{Decay} = (6.78E5/2.99792458) / 3.085678E22$

$\text{Hubble\_Frequency}_{Decay} = 7.32923061E-26$

If it were argued that the expansion is space expansion and not <u>real</u> velocity, it would still have the effect of slowing the <u>transmission</u> of bosons. At any point in that expansion (presuming no relativistic distortion), the bosons would be measured as moving at the speed of light. However, during the time of that measurement, the space ahead of the bosons would have expanded. As a result, the signal would have farther to travel. Because of this expansion, the wavelength would increase, which completely matches our current observations. Nevertheless, this increase would mean that it would take considerably more than 13 billion years for light to reach us from the edge of reality. We would be seeing the same image (though it would be red-shifted), just as it is today. The question then becomes: how much longer than 13.75 billion years ago did the Big Bang event take place? Secondly, would the above result not mean (under <u>current</u> presumptions) that the progression of entropy to have gone much farther than is theorised today?

3.0 Summary
This paper has formulated additional relativistic equations that do not contradict Special

Relativity. They are the same equations from a relativistic viewpoint. The equations presented

examine special relativistic distortions from the perspective of the distorted object, and they

determine the non-relativistic velocity from the observed velocity in the moving object. The

values of the non-relativistic velocity and the apparent relativistic velocity it engenders share

exactly the same validity. The equations relating these two perspectives are documented in this

paper, the most crucial equation being:

$$\text{Time} = \text{Time'}/(1+\text{Velocity}_{SRPD}^2/c^2)^{\frac{1}{2}}$$

The distortion in Time‖Time'‖Velocity (and in all other Relativistic quantities) can be distorted

to a theoretically infinite degree. An equation for the antithesis of the Real Time distortion must

be logically structured to allow for that.