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Remixing the Universe: Vikki Ramsay Time Theory

Vikki Ramsay*

Independent Researcher, United Kingdom.

***Corresponding author:** Vikki Ramsay, Independent Researcher, United Kingdom, Tel: 07576047565; E-Mail: vramsayinvertedtimetheory@gmail.com

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Abstract

This modification of general relativity adds another dimension to the time phenomenon for where m = 0, resulting an alternative type of Bounce cosmology, and provides a falsifiable prediction, that differs from general relativity, for a suggested doable experiment with precision clocks, where this experiment constitutes a further test of general relativity that has not yet been conducted.

***Keywords:** Modified relativity, Bounce cosmology, Testable prediction, Test of General Relativity, Hidden time dimension, Gravity, Precision clocks.*

Introduction

Time dilation and the equatorial bulge

To get us into the region where my model makes its alterations:

The equatorial bulge adds mass from poles to equator (shaded green) to the depth of 21.36 km, yet clocks (biggest dots) placed at sea level of these changing gravity potentials and centripetal motions of any longitude, all tick at the same rate.

Time dilation is calculated via gravity potential, or via relative motion.

Clearly the equatorial bulge creates changes in both gravity potential and relative motion that cancel each other at sea level for clocks to tick at same rate.

An increase in height causes a clock to tick faster. An increase in relative motion causes a clock to tick slower. Both of these tenets of General Relativity have been experimentally proven [1].

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General Relativity states that an increase in gravity causes a clock to tick slower - (technically this has not yet been proven, because experiments with clocks have also included changes in height/centripetal speed/centrifugal force, or haven't included a change in gravity, please see point 3) - so where the equatorial bulge is adding height, it is also adding mass.

A clock at sea level at The Equator is being caused to tick faster by remit of its position of height in the gravity potential (weaker gravity), and is caused to tick slower by remit of the increased centripetal speed of its position of height - and is also caused to tick slower by remit of the increased mass (stronger gravity) that is causing the height of its position.

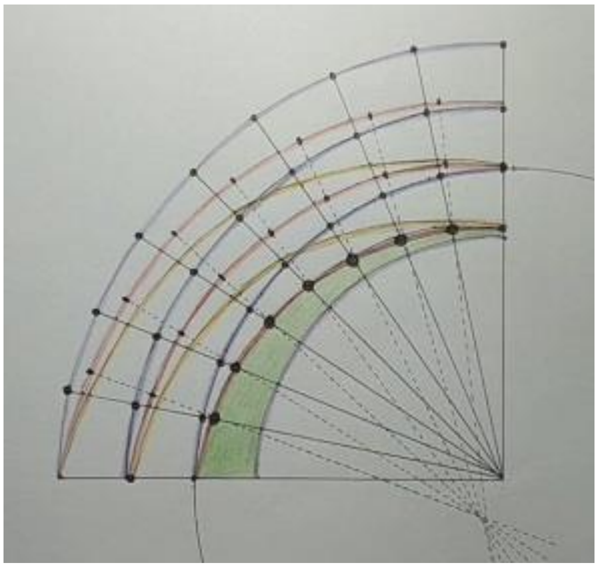

FIG. 1. **Equatorial Bulge**

GRACE satellites experiment [2] shows us, as we would expect where there is more mass, that gravity is stronger at the top of mountain than in the valley.

Our gravimeters, measuring gravity on Earth's surface, show us the opposite story - that gravity is weaker at top of mountain than in the valley.

This tells us that the increases in centrifugal force, caused by the increased centripetal speed caused by increases in height, are cancelling a considerable proportion of gravity's downward attraction.

Gravity potential is calculating gravitational acceleration as a combination of both gravitational and centrifugal forces.

In basic simplistic terms of which phenomenon is doing what…

Without adding mass of equatorial bulge, i.e.: a clock raised above the surface, it looks like this:

+height causes +centripetal speed = time goes slower

+height causes +centrifugal force = time goes faster

added together = time goes faster

And for the equatorial bulge it looks like this:

+height causes +centripetal speed = time goes slower

+height causes +centrifugal force = time goes faster

+mass causes -centrifugal force = time goes slower

+mass = time goes slower

Here there are 3 aspects causing the clock at sea level to tick slower, and 1 aspect causing the clock to tick faster, which when added together should cancel each other and result in same rate of time at sea level of each longitude. **FIG. 1**

This is where my model makes its first alteration. My model states, contrary to General Relativity, that a clock will tick faster in the stronger gravity.

Now the equatorial bulge looks like this:

+height causes +centripetal speed = time goes slower

+height causes +centrifugal force = time goes faster

+mass causes -centrifugal force = time goes slower

+mass = time goes faster

Here there are 2 aspects causing the clock at sea level to tick slower, and 2 aspects causing the clock to tick faster, which when added together should cancel to result in same rate of time at sea level of each longitude.

A clock raised above the Earth's surface is the same as with General Relativity:

+height causes +centripetal speed = time goes slower

+height causes +centrifugal force = time goes faster

added together = time goes faster

But a clock on a mountain looks like this:

+height causes +centripetal speed = time goes slower

+height causes +centrifugal force = time goes faster

+mass causes -centrifugal force = time goes slower

+mass = time goes faster

Where less +mass causes less -centrifugal force = time goes slower, in relation to more +height causes more +centrifugal force = time goes faster

= time goes faster up a mountain

(This system works just as well for an instance where the centripetal speed is reduced, where -centripetal speed = time goes faster. and -centripetal speed causes -centrifugal force = time goes slower)

To date all relativity tests [1,3,4] of precision clocks (on Earth, or in the space around Grav. Earth) have been undertaken in circumstance where the clock compared is subject to change/s in height, thus incorporating change/s in speed (centripetal/rotational drag), and change/s in centrifugal force, as well as change/s in gravity.

Or the clocks have been compared as to relative motion, where a clock is subject to change/s in speed and no change in gravity occurred.
Or different types of clocks have been compared under the same circumstance to test the equivalence principle.

Therefore it is not proven that a stronger gravity field will slow the tick rate of a clock, and the possibility of my model cannot be ruled out until it is proven that a clock experiencing only a change/increase in gravity does tick slower.
(Please find my suggested experiment/s to test this aspect of General Relativity in point 3)

Time for clocks and time for open space as separate aspects of the time phenomenon that occur concurrently

My model has stated the stronger gravity field as causing a clock to tick faster. This means that in the weaker gravity field time will run slower, where in my model it is the aspect of +centrifugal force at height, in the weaker field, in opposition to Gav. M, that causes a clock in the higher potential to tick faster.

This is where my model makes its second alteration to General Relativity

My model states an additional aspect to the time phenomenon for where m = 0.

The time dilation changes in this additional time phenomenon are equal to, but occur oppositely to, the changes in time for a clock in the gravity potential.
This time cannot be measured by a clock for the simple fact that a clock is not m = 0.
This time can be observed only in the fact that it will cause an object moving under the influence of gravity in the gravity potential to be decelerated moving into the higher potential, and accelerated moving into the lower potential.

(please see point 4 for a description of why this additional time phenomenon for background space can be attributed as a partial cause for gravitation)

My model then states that time for clocks is a 'timing' phenomenon, that all mass/atomic structures have their own inherent 'timing', and that the inherent 'timing' of all mass/atomic structures will increase or decrease equally, that is to say proportionally equal, with changes in the gravity potential.

(please see point 4 for a description of why these 'timing' changes for mass in the gravity potential can be attributed as a partial cause for gravitation)

Falsifiable prediction for a doable experiment with precision clocks

A further test of General Relativity can be conducted by comparing clocks that are ONLY experiencing a change in gravity.

So far precision testing of GR with clocks has been conducted concerning changes in height in the gravity potential, where the clock is, in addition to a change in gravity, also experiencing a change in centripetal speed and centrifugal force.

And precision testing of GR has also been conducted concerning a change in relative motion, where the clock is not experiencing a change in gravity.
In February this year 'portable' precision clocks were tested for the first time [4].
It is my suggestion that these portable clocks should be placed in circumstance where only a change of gravity is occurring, in order to confirm that General Relativity is indeed correct in assuming that an increase in gravity slows time down.

This could be conducted by placing a clock at 2 different locations of same longitude, and at same height above sea level, (to equalize position on equatorial bulge/centripetal speed/centrifugal force), but where there is known density difference in the geology of the locations, and thus compare how the clocks tick. This will constitute only a difference in gravity.

Or much more simply, just place a clock/clocks at one, or more, of the gravity wave experiment sites and observe how the clock ticks differently when a gravity wave hits, as compared to how it ticks normally. This will also constitute only a change in gravity.

General Relativity predicts that a clock that experiences only a change (increase) in gravity will tick slower.

My modification of General Relativity predicts that a clock that experiences only a change (increase) in gravity will tick faster.

Introducing an Alternative Spacetime Structure

These following worksheets illustrate how the geometric curvature of spacetime can be attributed to an additional temporal phenomenon, and how by adding this temporal phenomenon, this constitutes a renormalization term to the General Relativity distortion of the metric, resulting in Euclidean geometry, (or flat spacetime).

The descriptions below will ask you to consider that there are not 2 but 3 time dilation phenomenon occurring.

Time dilation 1 being caused by motion, both centripetal and other.

Time dilation 2 being caused by position of height in the gravity potential of M.

Note that this model states that time dilation 1 and time dilation 2 are for where m doesn't equal zero.

This model introduces the additional time phenomenon and its changes as time dilation 3 - this time being for where m does equal zero. i.e. for particles m = 0, and for the open spaces or 'background space' between masses.

The considerations below are based on a simple idea that if an object is travelling in a background space that is inherent with its own rate of time - a rate of time that the object must travel through - an object travelling at a constant speed over distances where seconds get progressively shorter, will be accelerated, and an object travelling at constant speed over distances where seconds get progressively longer will be decelerated.

I have described in the worksheets below, (perhaps unusually, hence the explanation), the 'up' 'down' changes of each time dilation phenomenon as 'partial derivatives' of that time dilation phenomenon. As well as signifying the plus minus changes in time, this notation is indicative of directional orientation in the gravitational gradient. These 'up' 'down' derivatives also become useful notation when a consideration of changes in acceleration contains both a plus and a minus of the same time dilation phenomenon.

The time changes in each of the 3 time dilation phenomena are then each considered as a partial derivative of changes in acceleration, where when added together in the manner suggested, these 3 partial derivatives of changes in acceleration become the changes in acceleration that are proportional to changes in gravity potential.

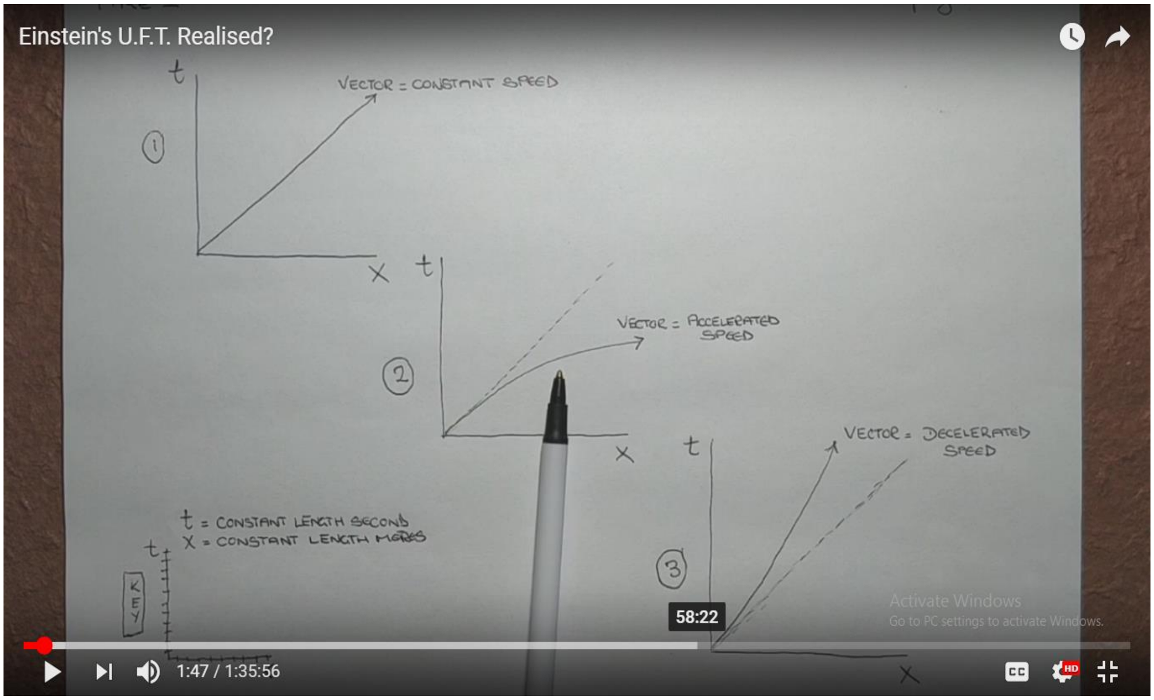

FIG. 2. **Pythagoras as a geometrical.**

FIG. 2 introduces the diagram that I use to make my description. This type, or structure of diagram, that confirms to Pythagoras as a geometrical consideration, is (as I am using it) a representation of the speed/distance/time formula.

Time is on the y axis, distance is on the x axis, and the line (which I call a vector because all considerations are concerning the changes in acceleration of an object travelling on that vector) is the speed, where a straight line describes a constant speed, and a curved line can describe an acceleration, or a deceleration.

That these plots, or graphs, can be representative of speeds that are constant, accelerated, or decelerated, relies upon the fact that the length of a second remains constant, and that the length of a metre remains constant, as demonstrated in the 'key' in the bottom left corner.

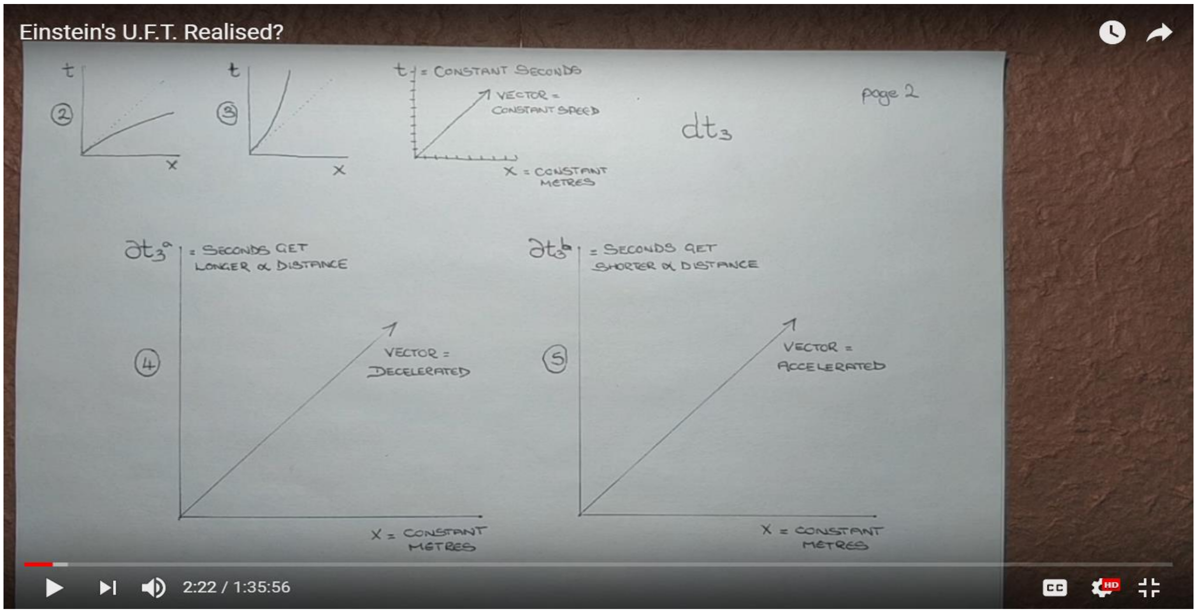

FIG. 3. **Seconds vs Distance.**

FIG. 3 demonstrates that by saying that seconds get longer proportional to distance in diagram 4, or that seconds get shorter proportional to distance in diagram 5, (clearly by a specific rate), that an acceleration or deceleration in the speed of an objects vector can be represented as a straight line, where these changes in acceleration of the object's trajectory through space can be attributed to changes in a phenomenon of time that occurs in the background space that the object is travelling through.

(That x is marked as equal to constant metres becomes relevant when x is held equal to metres that are not constant later on)

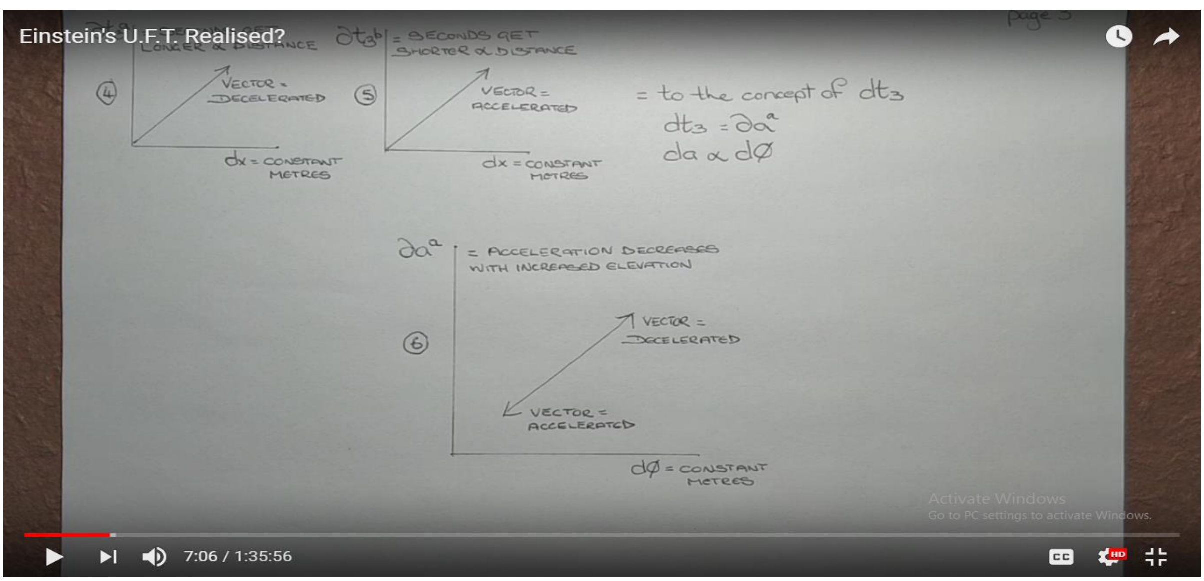

FIG. 4. **Seconds getting longer or shorter proportional to distance.**

FIG. 4 demonstrates that seconds getting longer or shorter proportional to distance in diagrams 4 & 5, are 'up' 'down' functions, (partial derivatives) of the same consideration, this being changes in time phenomenon 3 (dt3), and that these changes in time phenomenon 3 can be held relative to a partial derivative of changes in acceleration.

Partial derivative because there are other changes in acceleration to be considered, where all the partial considerations of accelerations added together in a suggested manner are then 'the' changes in acceleration, (da).

Having introduced an additional time phenomenon and it's changes as (dt3) in Fig 2 and 3, I now state that changes in time due to motion will be referred to as (dt1), and that changes in time due to position in the gravity potential will be referred to as (dt2).

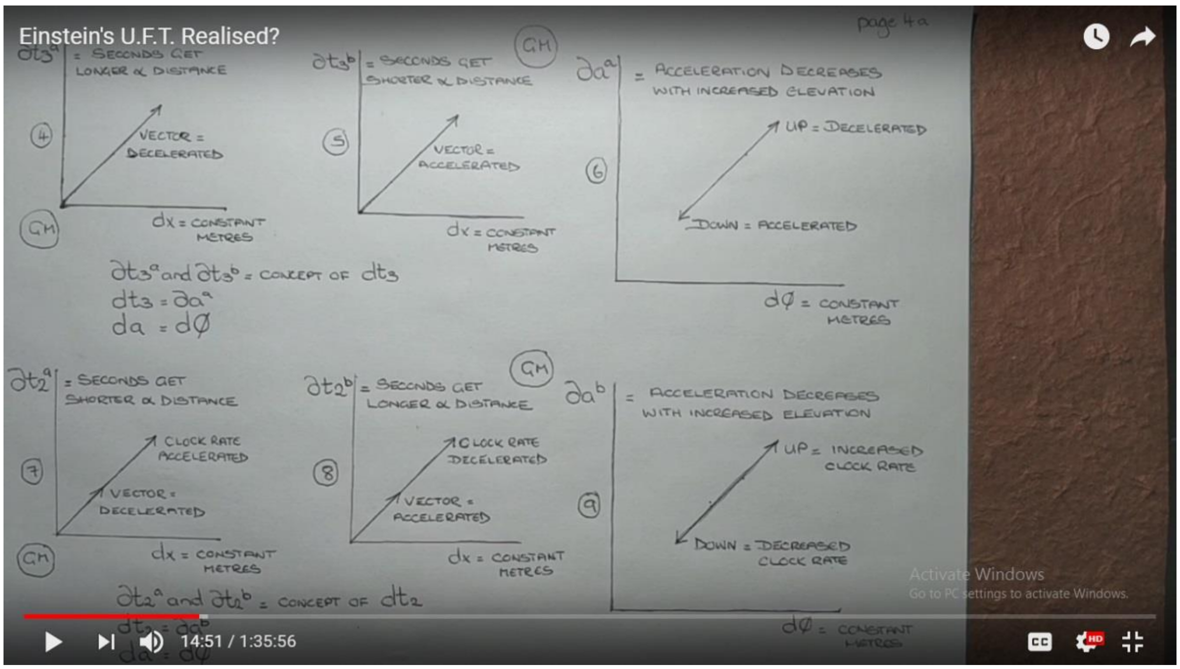

FIG. 5a. **Time dilation.**

FIG. 5a repeats the introduction of (dt3) from Fig. 3, and then introduces time dilation 2 (dt2) as an inverted consideration, (please note these curve manipulations do not represent true values as of yet), but in this case the changes in rate of time are occurring for the clock/mass that is on that vector travelling the distances of x.

This diagram is saying that an accelerated clock rate will cause an object's (the clock's in this case) vector in the 'up' direction to be decelerated, and that a decelerated clock rate will cause an object's vector in the 'down' direction to be decelerated.

This will occur due to the 'timing' of the object's mass structure being linked to the occurrences of magnetic moments, where faster electron transitions/activity will cause more magnetic moments to occur, in turn causing a stronger downward 'attraction' to Grav. M.

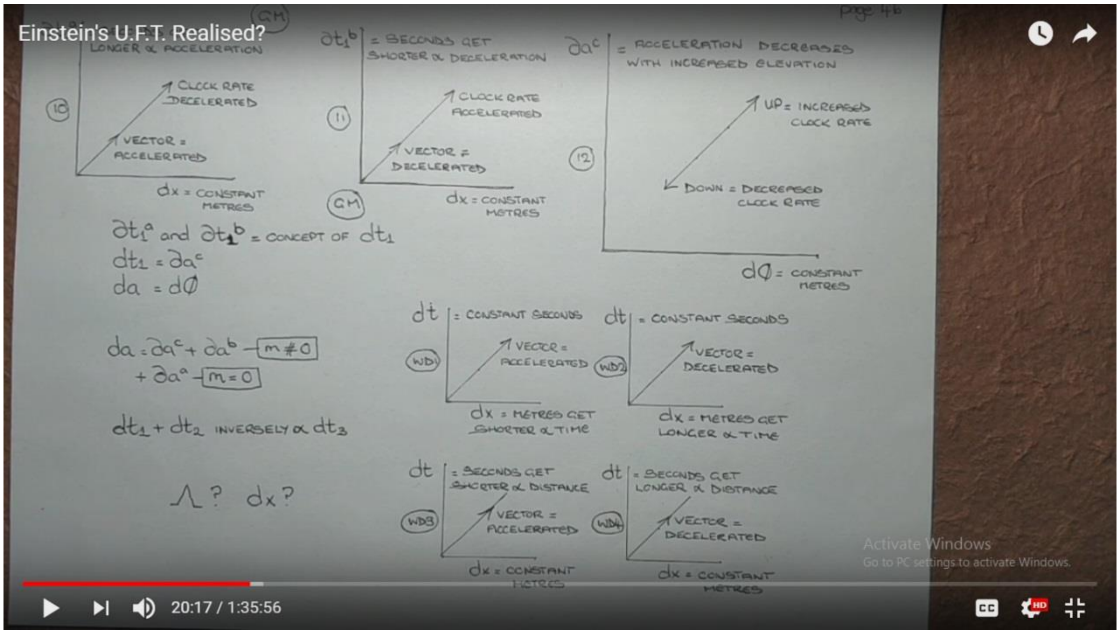

FIG. 5b. **Changes in time due to centripetal motion.**

FIG. 5b introduces the changes in time due to centripetal motion in the gravity potential as (dt1), where the changes in time phenomenon 1, (dt1), with regards to centripetal motion, are occurring inversely to the changes in time phenomenon 2, (dt2).

Now there are 3 partial derivatives of acceleration.

Partial derivative of acceleration (b), (being equal to (dt2)), and partial derivative of acceleration (c), (being equal to (dt1)), 'added together', are for where m doesn't equal zero.

Partial derivative of acceleration (a), (being equal to (dt3)), is for where m does equal zero.

Added together these 3 partial derivatives of acceleration become 'changes' in acceleration (da), where (da) are held proportional to changes in gravity potential.

And the changes in time phenomenon 1 (dt1), plus the changes in time phenomenon 2 (dt2), observed at any position in the gravity potential, are equal but inverse to the changes in time phenomenon 3 (dt3) at that position, (when the clock is held with the centripetal motion of the gravitational mass), where the changes in time of a clock in the gravity potential are those observed by the observer who we presume to be making the calculations.

Working diagrams (WD's) 1 & 2 demonstrate how - by implementing changes in x, where metres get shorter or longer proportional to the amount of time that passes, and changes in time are equal to constant seconds - this can be viewed as the inverse to the consideration of seconds getting shorter or longer proportional to the amount of distance covered, where changes in distance are held equal to constant metres, as shown in WD's 3 & 4. (which are the same as the diagrams no: 4 & no: 5, shown on **FIG. 3**)

What these working diagrams demonstrate is that changing the length of a second can provide the same results as changing the length of a metre.

This is starting to bear some resemblance to Minkowski spacetime.
However, by a simple manipulation of the speed-distance-time formula I can re-normalize the metric of General Relativity via dx-(dx/dt3)x(dt3) for flat spacetime, and by holding the speed of light relative to (dt3) describe why Special Relativity calculates length contractions via holding the speed of light constant.
Or I can hold the speed of light as constant, as with Special Relativity, and then re-normalize the length contraction changes of Special Relativity via dx-(dx/dt3)x(dt3), and then address the mathematical 'curve' - that is occurring by holding the speed of light constant in spaces where the speed of light is stated (by my model) as variable - by applying: dx-(dx/(dt1+dt2)x(dt1+dt2)* for flat spacetime.

(*being time dilation conventionally associated with General Relativity curvature. And to say so, it gets really interesting when looking at relative motion time dilation for objects moving via man made forces as opposed to gravitational, but that would be a whole other paper)

Because I'm not good at notation for math let me say those maths in words:
(...I can re-normalise the metric of General Relativity via: changes in x, minus changes in x divided by changes in time phenomenon 3 multiplied by changes in time phenomenon 3, for flat spacetime, and by holding the speed of light relative to changes in time phenomenon 3 explain why Special Relativity calculates length contractions via holding the speed of light constant.
Or I can hold the speed of light as constant, as with Special Relativity, and then re-normalise the length contraction changes of Special Relativity via: changes in x, minus changes in x divided by changes in time phenomenon 3 multiplied by changes in time phenomenon 3, and then address the mathematical 'curve' - that is occuring by holding the speed of light constant in spaces where the speed of light is stated (by my model) as variable - by applying: changes in x, minus changes in x divided by changes in time phenomena 1 & 2 added together multiplied by changes in time phenomena 1 & 2 added together* for flat spacetime.)
This is now a background independent spacetime structure (that can describe grav.lens) that incorporates both General and Special Relativity in a manner that should be compatible with Quantum.

But to say so, this spacetime structure is incompatible with Hubble's Flow interpretation of the redshift observations.

Gravity Lens

Light from light source falls off via inverse square law at speed c, where speed c is held as 299 792 458 metres relative to a time period.

Changing the length of that time period will affect the rate that light falls off.

Placing a Grav. M between light source & observer causes time periods in space to be shorter = light moves faster, covering more distance in less time = less fall off for light than before = more light arrives at position of Grav. M than arrived at that position when Grav.M wasn't in-between, and therefore more light arrives at observation point = Grav. lens.

Bounce Cosmology

The consequences of my model's alterations to General Relativity are far reaching indeed, and lead to a very different kind of Bounce Cosmology, inclusive of physical cause and effect mechanics for Big Bang, Inflation, Contraction and some ballpark figures (that involve the discrepancy between the magnitude of the CMB recessional velocity versus galaxy recessional velocity) for a far older universe (in years of our rate of time) than conventional view holds.

General Relativity can describe a contraction just as easily as an expansion [5].

My model states the universe as 'slowly' contracting under the influence of gravity, at an accelerating rate, as of the end of my model's alternative description of Inflation.

My model predicts that due to the contraction process that 'everything' will eventually end up in black holes (jetting particles that will end up back in black holes), where these black holes will merge, and merge, and further merge, until there is only one singular black hole.

And this singular black hole with all of the universe compressed inside it, due to it having no counterbalancing gravitational counterpart, will, as soon as it becomes singular, explode 'all' of its contents in a particle/energy form via superluminal jets, (i.e.: my model's big bang/inflation) and empty itself out of existence in fraction of a second, causing an Inflation Period that results in an almost uniform sea of particles/energy.

It is this almost uniform sea of particles/energy that are my model's initial conditions for an extremely slow contraction process that accelerates at a snail's pace (c^2/R), during which the universe develops from a sea of particles into what we observe today.

And what we observe today is this division of what we call 'the gravity field' of an almost uniform sea of particles, into clumps of stronger gravity (i.e.: mass clumping), and open tracts of anisotropically distributed weaker gravity (i.e.: open spaces between clumped mass created by particles vacating their former positions to the clumping process).

Noting that my model includes additional (to GR) axioms of “+energy = shorter seconds” and “the speed of light cannot exceed the local rate of time”, I will now demonstrate how changes in the rate of time will cause a contraction.

Age of Universe = approx.: 13.8bln years

This being the conventional view worked out via redshift observations in relation to stellar distances.

Because I am re-describing redshift I can use that time period.

13.8bln x c = R

R being the observable universe via conventional view, where (c) is held relative to 'our' rate of time second.

c^2/R = a

Being the rate that the universe is thought to be accelerating in it's expansion, ie: the cosmological constant.

13.8bln x (c+a) = 1.5 x R

I am interested in the magnitude 0.5 x R because I am stating (a) as being caused by changes in the rate of time…

a = dt

...where (c) at start of distance R is held relative to a second that is half as long again as our rate of time second, ie: 1.5 x 1 of our rate second.

And over distance R the length of these seconds will get progressively shorter until our present day and our current length of second.

Looking at how this affects the extra distance of R travelled:

Taking the average

1.5 x R / 2 = 0.75 x R

1 x R - 0.75 x R = 0.25 x R

Or 25% of R

(It is important at this stage to relinquish the idea of distance R being associated with the notion of 'observable universe' or 'the age of the universe'. I am only using these magnitudes as a mathematical tool.)

25% of R

Where light is not travelling 25% of 1 x R, where R is calculated via 'our' rate of time, as per conventional age of universe, due to time being progressively slower historically, ie: an alternative redshift description, via my additional axiom: “The speed of light cannot exceed the local rate of time”.

So (c) held relative to variable length seconds = variable light speed, and (c) travelling at variable speed held relative to 1.5 x 1 second, and reducing to 1 x 1 second, at an acceleration of (a = c^2/R)* over R, will not cover 25% of R.

(*Where c^2 is held relative to 'our' rate of time second.)

Galaxy recessional velocity via conventional view is, by experiment, found to be 8% faster than CMB recessional velocity [6]

25% - 8% = 17%

I am saying that galaxy redshift is 8% velocity related due to galaxies of galaxy clusters converging upon each other, and the total redshift accounts for 25% of R. So 25% of R minus 8% = 17% of R universal* time dilation related where, where 17% of R describes the CMB shift because this is the percentage of distance R that the universe has contracted by.

(*I say universal because this is a re-description of Hubble's Flow redshifts, where universal time is increasing at c^2/R, and 'local' time for both where m = 0, and where m doesn't equal zero, will be equally affected)

Where it is the phenomenon of universal time getting faster that 'causes' the universe to contract, and it is the universe contracting that increases universal energy density, that in turn causes universal time to get faster, via my additional axiom (+energy = shorter seconds).
The 'table' below takes these considerations back into the past, and into the future, for some approximated ballpark figures for my model's age of the universe, and how much longer, as per 'our' rate of time, it will take for the universe to be fully contracted for the next (my model's version of) Big Bang.

50% Ratio =	**Changes in Time (dt)**	**25% Ratio = (dt) Averaged over R**	**X 13.8bln = Years as per ‘our’ Rate of Time**	**Number of Years ‘our’ Rate Time Ago =**	**1 x R minus Percentage of R not Travelled due to Time Dilations = Percentage of R Travelled**		**50% Ratio =**	**Percentage of R not Travelled due to Time Dilations**	**Minus 33% = Percentage of R due to Velocity Redshift**	**Percentage of R Contracted By**
+50%	16.75	14.23828125	196.48828125	554.96480925	+99.609375		-50%	0.390625	0.12890625	0.26171875
+50%	11.390625	9.492185	130.992153	358.476528	+99.21875		-50%	0.78125	0.2578125	0.523435
+50%	7.59375	6.328125	87.328125	227.484375	+98.4375		-50%	1.5625	0.515625	1.046875
+50%	5.0625	4.21875	58.21875	140.15625	+96.875		-50%	3.125	1.0325	2.09375
+50%	3.375	2.8125	38.8125	81.9375	+93.75		-50%	6.25	2.0625	4.1875
+50%	2.25	1.875	25.875	43.125	+87.5		-50%	12.5	4.125	8.375
+50%	1.5	1.25	17.25	17.25	+75		-50%	25	8.25	16.75
NOW =	1 Second	1 Second		Age of Universe Now =========== 554.96480925 ===========				50	16.5	Universe has Contracted By Now ============== 33.23827875% ==============
-50%	0.5	0.75	10.35	10.35	0		+50%	100	33	67
-50%	0.25	0.375	5.175	15.525	-100		+50%	200	66	134
-25%	0.1875	0.34375	4.74375	20.26875	-200		+25%	300	99	201
			Years ‘our’ Rate of Time until Full Contraction => Age of Universe at Full Contraction =>	============ 20.26875 ============ +554.96480925 ============ 575.23355925 ============	Total of 1 x R Travelled at Full Contraction = ============ 350.390625% ============ /100 ============ 3.50390625 x R ============				Radius of Universe post Inflation = >>> Radius of Singular Black Hole = >>>>>	============== 435.23827875% ============== / 100 ============== 4.3523827875 x R ============== - 3.50390625 x R ============== 0.8484765375 x R ==============

TABLE 1. **Universal Time**

But if an observer ‘present’ in the universe could observe from beginning of contraction process till end of contraction process, that observer would experience ‘roughly’ 10 × 13.8 billion years.
(I realize that this **TABLE 1** would be better described via differential equations, but that level of mathematics is beyond my personal capabilities at present.)

On the left hand side of the table:

Go from 'Now' up the page to look back in history.

Going from 'Now' back in time historically for distance R, where 13.8 billion (of 'our' rate of time) years ago, 1 second was equal to 1.5 of 'our' seconds.

Taking the average of the lengthening of a second over R:

1.5 / 2 = 0.75

1 - 0.75 = 0.25

(units of seconds 'our' rate time)

Or one could just say half of the 0.5 extra length of second = 0.25

1 / 4 = 0.25

1 + 0.25 = 1.25

1.25 × 13.8bln = 17.25bln years 'our' rate of time.

In 17.25 bln of 'our' rate time years, light will cover 75% of 1 × R distance (calculated via 'our' rate of time and conventional age of universe).

Left hand side of table shows that the universe will have been contracted by 16.75% of R.

So to calculated further back into history:

(1.5 / 2) + 1.5 = 2.25

Averaged over R:

1.5 / 4 = 0.375

0.375 + 1.5 = 1.875

1.875 x 13.8bln = 25.875bln years 'our' rate of time.

In 25.875 + 17. 25 bln of 'our' rate time years, light will cover 87.5% of R distance, and the universe will have contracted by 16.75 + 8.375% of R.

On the right hand side of the table:

Remembering that c^2/R = (a), where (c) is held relative to 'our' length of second.
And remembering that (c + a) x 13.8bln years = 1.5 × R

Taking the average:

1.5 × R / 2 = 0.75 × R

1 × R - 0.75 × R = 0.25 × R

Or 25% of R

Or one could just say half of the 0.5 extra distance of R due to (a).

So half of 25 is 12.5, half of 12.5 is 6.25, etc.

Next I minus 33% to calculate the velocity related redshifts, and then subtract the latter from the former for a percentage of R contracted by.
Adding up the percentage by which R is contracted at each stage in history, dividing the total by 100, and then multiplying the result by R, gives the Total Contraction Distance.
Go down the page from 'Now' into the future, and the length of a second gets shorter.

Going forward into the future from 'Now', I think that the 'ceiling' is 303% of R for 99.99% velocity related shifts and full contraction. At 100% a Big Bang will occur.

Going back in time from 'Now', I think that the 'ceiling' for the amount by which a second can be 'historically'* longer is around 16 × 1 of 'our' seconds.

(*Again - I am referring to the historical increases in time here which will apply to the rates of time for both mass and open space 'everywhere' due to energy density increasing due universal contraction, where 16 × 1 of our seconds will apply to an almost uniform gravity field, i.e.: the sea of particles, and (c^2/R = a) describes the increases in the historical changes in the rate of this 'universal' time.
Via my spacetime structure, out in deep space far from mass, the 'local' length of a second can be equal to more than 16 × 1 of 'our' length seconds.)

As is the case with Relativity, a second in relation to the calculations R = c x Age of Universe (calculated as per conventional redshift velocity interpretation), the equation of c^2/R, and the observations of the CMB and Galaxy redshifts, will all result in the same ratio of proportionality from the reference frame of any gravity potential, the reference frame of any given point in history, and the reference frame of any given point in the future.

This model does not change the inherent mathematical structure of General Relativity or Quantum, but simply slots it's alterations into the existing structures via a re-description of changes in wavelength'/spatial curvature for Relativity, and a description for Quantum via the wave function and the square of the wave function being time dilation related.

Attributes of Model

This model does not require dark energy because it is contracting under the influence of my model's description of gravity.
This model does not require dark matter because gravity fields can be summed up to describe the additional gravitational acceleration.

By extending the age of the universe, this model allows for plenty of time for the universe, and in particular the observed supermassive black holes, to develop under the influence of gravitation.
This model, as presented, describes a cyclic bounce cosmology, where the mass of the last universe is the start of the new universe.

What this model has not given description for is all the mass/energy existing in the first place. I do have some ideas that could take this type of cyclic universe all the way back to a creation moment - although, as is the case with other models, I am not at-all sure that I can describe a physical cause for the transition of there being nothing, to there being something.

However, I note that there is little point in extrapolating further unless my model's falsifiable prediction is proven correct by experiment.

Conclusion

It is my conclusion that Hubble's Flow can be re-described via treating the observed changes in electron transitions of clocks in the gravity potential as being due to 'energy' changes, (where an increased tick rate increases the rate at which an atom's magnetic moments are produced), and then attributing open space/s with a hidden dimension of the time phenomenon for where m=0, (that occurs separately to, but concurrently with the timing of clocks), via an anisotropic distribution of 'energy density' in open space/s.
By applying my model's axioms "+energy=shorter seconds" and "The speed of light cannot exceed the local rate of time", the observations of gravitation and the observations of cosmological redshifts can both be described purely by the changes in the rate of time occurring within the separately caused dilations of a 3 dimensional time phenomenon, where this description is compatible with both General Relativity and Quantum.

I conclude that this re-description of Hubble's Flow results in a Bounce Cosmology Cyclic Universe that makes all of its clumping development via an extremely slow, but accelerated contraction - a contraction that constitutes a division of a post Inflation, almost uniform, gravity field into clumps of mass and tracts of open space - and that the progression of the observed black hole phenomenon eventually becomes the physical mechanism for a Big Bang and Inflation.

Finally, my conclusion is that this model can be tested, via an experiment that has not yet been conducted, by comparing the tick rate of precision clocks that are ‘only’ experiencing a difference in gravity. If, contrary to the General Relativity prediction, the clock in the stronger gravity is observed to tick faster, then my modification of General Relativity will be experimentally proven.

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