

# The Creation Of The Universe

(almost) everything you need to know.

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3/23/2013

(Most Recent Update: Saturday, 04/27/2013 08:43 PST)

(Latest Edit: revised ending)

## Chapter One (“In The Beginning”)

### Plan A

One day God woke up and decided to create the Universe. His Original Plan was to pour a mixture of stuff He called “Mass” (which He also called Light) into a single coordinate point called the Origin, at a constant rate which He called  $C$ . In a specific interval of time  $\Delta t$  He decided He would pour a specific amount of mass  $\Delta M$  into the Origin at a constant rate, so that he wouldn’t be confused about the process, and could characterize the total amount of Mass He had poured from the Beginning at  $t_0 = 0$  by  $\Delta t = t - t_0 = 0$  (so that  $T = t$ ).

(This may seem a trivial point to you and me, but God kept forgetting at what time he started, since he was getting on in years). However, he was very careful that he didn’t miss the origin at  $\Delta x = x_0 = 0$ , because light (i.e, mass) was very precious, and He didn’t want to waste any of it.

The Light was purchased from the local Mass store by mixing according to the permittivity ( $\epsilon_0$ ) and permeability ( $\mu_0$ ) constants, and then applying them by using Gauss’ and Ampere’s mixing laws...

The Light/Mass concoction was then adjudged to be correct when mixed according to the formula  $= \frac{1}{\sqrt{\epsilon_0 \mu_0}}$ . Maxwell. The quantity of mass He had pumped into this coordinate point after a time  $T$  could then be characterized by the relationship  $\Delta M = C \Delta t$ , so that  $C = \frac{\Delta M}{\Delta t}$ .

Note that if  $\Delta t = 0$ , then  $\Delta M = 0$ , since He had not yet poured any mass, so  $C$  could be anything at all, since He hadn’t yet made a decision about it...

(Actually, there were two kinds of mass in the light he was pouring, mixed equally, which were called Positive Mass and Negative mass, but to God couldn't differentiate between them , so he didn't worry much about it, since he was the only one pouring).

## Plan B

The above was His Original Plan, but just as he had got all the Positive and Negative Mass mixed smoothly and was ready to begin pouring, His son Jesus walked up and said “Dad I’d like to help out. Right now I’m slower than You, and pour at a rate  $V < C$ , but I can work at a different schedule  $T'$ , and we can get more of the Universe made if We work together.”

God wasn’t too excited about this, since he had created one universe before this in exactly the same way he had planned to create the one he was currently working on, but He couldn’t remember where he had put it, so He decided to agree to his son’s offer.

The rate at which the Son could pour light into the same coordinate point (The Origin), starting at the same time, could then be characterized as  $V = \frac{\Delta M'}{\Delta t'}$ , since the Son could pour for a longer or shorter period than his Dad, and so could add a different amount of light to the Universe  $\Delta M' = V\Delta T'$  starting from the same time. Since space and time were considered independent of each other (which is why God had forgotten where his first Universe was, and even when he created it, or if he even had yet), the origin could be characterized by the point (0,0), and space and time by two axes centered at that point.

It is important to remember that although the point (0,0) is important to remember (since God and Son are creating the Universe at the same place and time), the position is irrelevant, since they could be creating the second Universe “anywhere, anywhen”.

Now, since the rates and times of God and Son are different, their results are also independent of each other, so that starting from 0, for a given interval  $\Delta T$  their combined output  $M_T$  can be characterized by  $(\Delta M_F, \Delta M_S)$ ; that is, by  $(C\Delta T, V\Delta T')$ , where  $M_F$  is the amount of mass poured by the Father and  $\Delta M_S$  is the amount of light poured by the son.

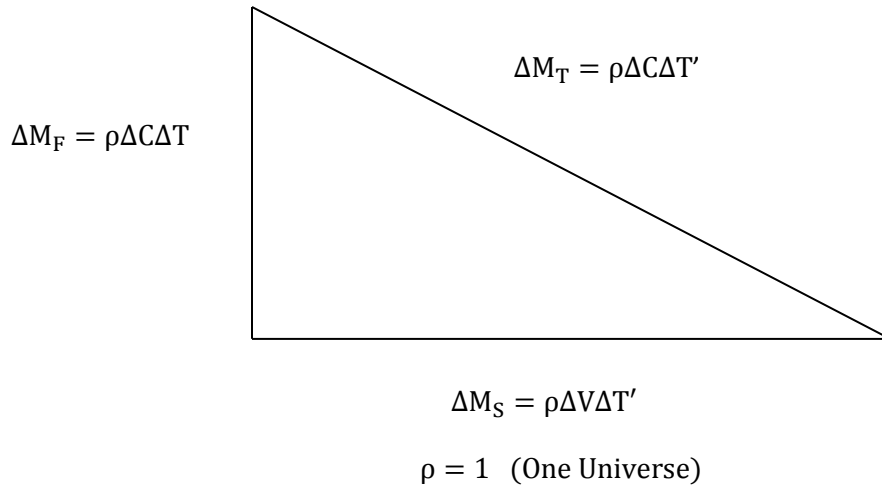
If BOTH of them change their mass rate by the same amount, the new output would be characterized by a density  $\rho$ , so that  $(C\Delta T, V\Delta T')' = \rho(C\Delta T, V\Delta T')$ . However, since Father and Son are the only two guys working,  $\rho = 1$ .

The independence of the results is explained algebraically by a relation eventually invented by a Greek called Pythagoras (to his friends), and is that of a right triangle, where:

$$(M_T)^2 = (\Delta M_S)^2 + (\Delta M_F)^2; \text{ that is, } (C\Delta T')^2 = (V\Delta T')^2 + (C\Delta T)^2.$$

The “Time Dilation” equation characterizes the relation between the output of the Father and the output of the Son by the scaling factor between their rates, so that:

$$\Delta T' = \frac{\Delta T}{\sqrt{1 - \frac{V^2}{C^2}}}$$



(It should be noted that after the Universe had been created, a guy by the name of Maxwell denied the existence of Mass by burying it in a couple of constants, and then showed that the light was only created at his own origin (locally) by assuming force between two masses brought together isotropically and homogeneously, except he called them "charge" (since he couldn't undo (or even see, except by stubbing his toe) the mixture God had poured), building on results from his predecessors Gauss and Ampere). (A guy named Higgs and his collaborators are working on that problem....)

After the combined specific time interval  $\Delta T'$ , the Universe had been created, and Father and Son went off to have a beer together.

Notice that if  $CT = VT'$ , then Son has caught up with his Father and there are two Gods, and if  $VT' > CT$ , they have switched roles (or there may be two Gods and a Son, or two Sons and a God), depending on your perspective and imagination.....

In any case, the real reason the Universe was characterized by the factor  $CT'$  was that God was jealous, and wanted the credit for creating the Universe for himself, even though there was more Mass in it than if he had created it alone at His own rate  $C$  by lying that he had simply worked longer  $T'$  than he had when creating his first Universe. He also noticed that if he instead claimed that creating the Universe had taken the same amount of time, but that he had worked faster ( $C'$ ), then he could also claim the same Universe by  $C'T$ , so that  $M_T = CT' = C'T$ .

It was only by changing both that anyone could ever figure out that the Son had been involved...

$$M'_{C',T'} = C'T'$$

Now the Son was occasionally disappearing on projects of his own, which usually ended badly, and God figured out that if he paid the Son an infinitesimally small allowance ( $dT$ ) to assuage his hurt feelings that God did not care, and had not given him credit for the local work.

## Chapter Two (“The Reckoning”)

Now the banks that provided credit for the positive and negative energy God was using to create the Universe were beginning to think a scam was going on, since even though God had forgotten where his original Universe was, the banks knew about it for sure. The bankers were even more skeptical when God talked about a prospective profit  $dT$ , (which He called “Soul” to try to confuse the bankers).

Since the Banks found the two Universes were different by small but observable amounts, they scoffed at God’s explanation that the new Universe was better (had more Mass) because God had either worked faster or taken longer (not to mention the allowance), which they had also noticed). In fact, they called such a foolish (and possibly criminal) explanation “contra-variant”, since it was against all principles of logic and bookkeeping. They were also highly suspicious of God’s claim that he had been working alone, and that only one Universe had been created, since God had declared that  $\rho = 1$  on his credit application.

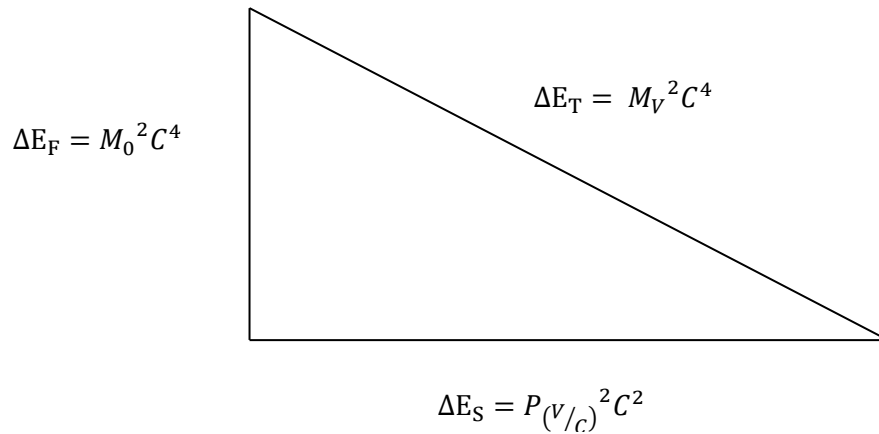
The bankers came to the conclusion that the problem was that they had not been precise enough when they approved the credit form. They could only tell a difference by comparing the second Universe with the first, and in order to hold God accountable, they had to require that the Mass of the first Universe  $\Delta M_U = (1)\Delta C_U \Delta T_U = \Delta M_T \left(\frac{\Delta V}{\Delta C}\right) = \rho \Delta C \Delta T \left(\frac{\Delta V}{\Delta C}\right)$ , so the books would agree if  $\rho = 1$ ,  $\Delta V = \Delta C$ ,  $\Delta C_U = \Delta C_T$ , and  $\Delta T_U = \Delta T_T$ . If the books were balanced, and there was no contribution from the Son, the bankers decided to use a subscript of 0 (instead of U), since that would indicate a “starting point” for comparison.

If there were and additional mass created by the son, it could be represented by adding a quantity called the “Momentum  $P_0 = M_0 V_{T'} = M_0 \left(\frac{V_{T'}}{C_0}\right) C_0$  in terms of the reference, and to ensure that all quantities were positive (so there would be no distinction in positive or negative Mass or Rate of Creation, this quantity would be squared, so that  $P_0^2 = (M_0 V_{T'})^2 = \left(M_0 \left(\frac{V_{T'}}{C_0}\right) C_0\right)^2 = P_V C_0^2$ . This meant that a new quantity, called the “Rest” Energy (even though it referred to the reference energy created by the Father alone that  $E_0 = M_0 C_0^2$ , so that the total energy of Father and Son could be represented by the equation:

$$(M_V C^2)^2 = (E_{M_0, V, C_0})^2 = (P_{M_0, \beta} C_0)^2 + E_0^2, \text{ where } \beta_{V, C_0} = \frac{V}{C_0}.$$

Then  $M_V^2 C^4 = P_{(V/C)}^2 C^2 + M_0^2 C^4$ , so that  $E_{Total}^2 = E_{Son}^2 + E_{Father}^2$

This model ensured that if there was work by the Son, then it was completely accounted for, and was independent of that of the Father, and if there was no contribution by the Son, then the total contribution was that of the Father.



## “Space-Time”

One of the bankers (Einstein) began to ask himself the question: “How will we ever know if the Father and/or the Son comes back and tries to change the Universe that was created?”

One of the older bankers (Minkowski) thought about it a bit, and came up with the idea of a space-time coordinate system that could be related to the Mass of the Universe. Since the Bankers new about how the mass scaled relatively to the efforts of Father and Son, the idea occurred to them to reintroduce the idea of velocity as a ratio between time (which Father and Son had used as a measure of how much mass was poured into the Origin) and a second parameter called “Space” which would relate a measure of the mass that was created in real time (during the process), so the bankers could keep track of the mass as it was poured, not merely observe it at the end ( $\Delta x' = c\Delta t'$ ), as well as the time that had elapsed ( $\Delta t' = \frac{\Delta x'}{c}$ ). However, they had to include the efforts of both the Father and Son in the analysis, which perplexed them for some time.

In the end, they decided that  $(x,t)$  and  $(v,c)$  had to be expressed in the system  $(X,T)$  and  $(V,C)$ , but that seemed like a circular argument, since all one was doing was changing the labels. Finally, one of them noticed that the “space-time” variables were independent (orthogonal), and if they defined  $v = \frac{\Delta x_v}{\Delta t_v}$  and  $c = \frac{\Delta x_c}{\Delta t_c}$  they could calculate the separate contributions of Father and Son by setting  $v = V$  and  $c = C$ .

The bankers the back-solved the original equation to give  $V_{Son} = C_{Father} \left( \sqrt{1 - \left( \frac{\Delta T}{\Delta T'} \right)^2} \right)$ . By making the identification above, they then found that  $\frac{v}{c} = \sqrt{1 - \left( \frac{\Delta T}{\Delta T'} \right)^2}$ . They then broke  $\frac{v}{c}$  down into its coordinate components, so that  $\frac{\Delta x_v \Delta t_c}{\Delta t_v \Delta x_c} = \sqrt{1 - \left( \frac{\Delta T}{\Delta T'} \right)^2}$ . The bankers had not expected this relation since they couldn't understand why the T's and t's did not seem to be related. Finally one of the younger bankers pointed out that the equation could be understood if there were two solution

**1st Solution (Common Distance):** by setting  $\Delta x_v = \Delta x_c$ , one arrives at  $\frac{\Delta t_c}{\Delta t_v} = \sqrt{1 - \left( \frac{\Delta T}{\Delta T'} \right)^2}$

so that  $\Delta t_v = \frac{\Delta t_c}{\sqrt{1 - \left( \frac{\Delta T}{\Delta T'} \right)^2}}$

**2nd Solution (Common Time Interval):** by setting  $\Delta t_v = \Delta t_c$ , one arrives at  $\Delta x_v = \Delta x_c \sqrt{1 - \left( \frac{\Delta T}{\Delta T'} \right)^2}$

The quantity  $\frac{\Delta T}{\Delta T'} = \frac{C \Delta T}{C \Delta T'} = \frac{M_{Father}}{M_{Father \text{ and Son}}}$  appears in both Solutions, and is represented by a single symbol, "β". The quantity  $\frac{1}{\sqrt{1 - \left( \frac{\Delta T}{\Delta T'} \right)^2}} = \frac{1}{\sqrt{1 - (\beta)^2}}$  can then be represented by a single symbol "Γ", so that

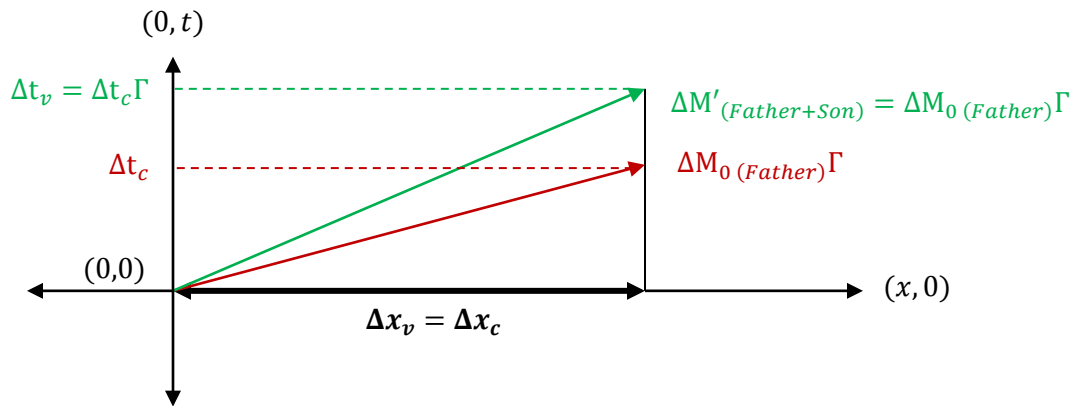
both β and Γ refer to the ratio of The Father's effort to the total effort of Father + Son. If "x" is called "distance", solutions 1 and 2 can be characterized by the following interpretations:

### 1st Solution

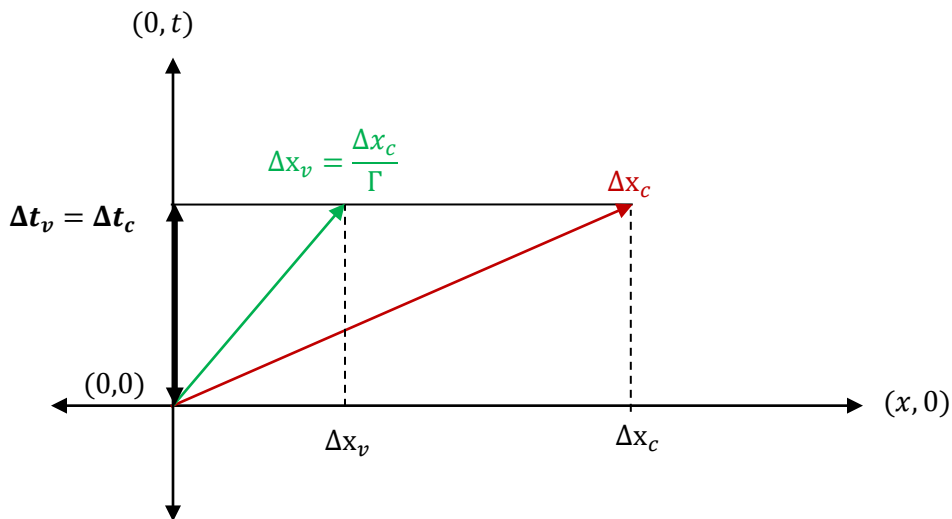
**(Common "Distance" (Field) Interpretation:** It will take a coordinate point representing the Father + Son combination a longer time to travel a given distance than a coordinate point representing the Father (v = c) alone by a factor of  $\Gamma_{v,c} = \frac{t'_{(Father+Son)}}{t'_{(Father)}}$ . This implies a different coordinate system )"frame/mesh" for each velocity in space-time; i.e., the relationship is not space-time coordinate-independent. (World-lines representing velocity are slanted with respect to that with v= 0, and the "slant angles" depend on  $\Gamma_{v,c} = \frac{1}{\sqrt{1 - \frac{v^2}{c^2}}}$ , not  $\beta_{v,c} = \frac{v}{c}$ )

Each particle with v < c "world line" will be slanted more vertically than that of the reference world line of a photon.  $\Gamma_{v,c}$  can be interpreted as a "density" of a medium that characterizes the difference in duration of the journey relative to that of c, such that  $\rho(v) = \rho(c)\Gamma_{v,c}$ . If we take  $\rho(c) = 1$  as a reference (valid for all values of v), then  $\rho(v) = \Gamma_{v,c}$ . This density is then characterized as a scalar field where  $\rho(v)$  is velocity dependent. This means that the mass of each coordinate point in such a "frame" is dependent on the velocity for a particular value of t'. (One is comparing a mass field of light to the mass field representing a particle with v < c) at each coordinate point.

It should be emphasized that a coordinate point can only have a density associated with it if light and/or mass is present at that point. (So each point is a Universe unto itself)



**2nd Solution (Common Time (Field)):** A coordinate point representing the Father + Son ( $v < c$ ) won't travel as far as the coordinate point representing the Father ( $v = c$ ) given the same amount of time  $\Delta t_v = \Delta t_c$ .



Again, if  $\Gamma_{v,c} = \frac{\Delta x_c}{\Delta x_v}$  is interpreted as a density, it implies that a coordinate particle with  $v < c$  will not travel as far during a given time than a photon traveling at  $v = c$ . Again, the mass of each point in the coordinate frame ("where" it exists) is characterized by this density.



## (Mass-Energy Interpretation)

The Mass contributed by the Father + Son  $M' = C\Delta T'$  will be greater than that contributed by the Father alone  $M_0 = C\Delta T$  by a factor of  $\Gamma_{V,C} = \frac{\Delta T'}{\Delta T}$ , where V and C refer to the rates of Mass contribution by the Son and the Father, respectively.

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The “relativistic” time and distance are independent of each other (orthogonal in a “Galilean” space-time diagram), but are determined by  $\Gamma^\beta$ , not by coordinate “velocity”  $v$  determined by  $\Delta x = v\Delta t$ .

The theory is called “gauge invariant”, because it is consistent in space-time, provided that one can provides a “gauge” transformation between Galilean coordinates (but determined by the Masses in E-K space).

The first solution is the action at a single coordinate point in space, describing a change of mass with respect to a time interval, the second solution is action at a single instant of time over a single coordinate length in space, describing a change of mass with respect to space.

If the solutions are independent (velocity is a straight line), energy and momentum are conserved, and after the Universe is created, Father and Son are no longer involved. However, if the Origin of the Universe moves in the Space-time diagram, then at least one of the two have returned and altered the Original Mass of the Universe by adding Mass (or both) – this effectively moves the Origin to a different position in the space-time diagram, determined by V and C.

The other bankers all applauded (after some argument and confusion) and called this analysis “The Special Theory of Relativity (STR)” for reasons that to this day are not clearly understood.

Finally, both solutions refer to a relation between Masses at an Origin created by Father (and possibly Son) at the Origin, determined by  $X=CT$  in Energy-Momentum Space (E,K). The concept of “extension” (i.e., coordinate lengths or periods) only refers to this relation in one or the other of the two solutions.

The first solution is the context of (Linear) Quantum Field Theory, and the second is the context of (Linear) Gravity. Both are described by orthogonal Galilean Coordinates (with the scale modified by the Mass created by the Father-Son team). The General Theory of Relativity is a religion describing the interaction of God with the Universe (curved space-time that cannot be transformed (“flattened” by tensor contraction – i.e. dot and cross products) to a Galilean coordinate system.)

There is one absolute reference “frame” (grid), and that is the frame that defines the “velocity”  $= \frac{\Delta x_c}{\Delta t_c} = C$ , which is the “Speed” Of God.....

In particular, if there is a change in the Mass of the Universe, either the Speed of God has changed, or the Father and Son have fiddled with it again.

## Suspicion of a Scam

One of the bankers looked a bit more closely at Solution 1, which said that:

$$\Delta t_v = \frac{\Delta t_c}{\sqrt{1 - \left(\frac{\Delta T}{\Delta T'}\right)^2}}$$

He realized that the small letters were just a new form of labeling, and that the underlying assumption was that “space” was irrelevant to the final result, since it factored out by setting the “distance” traveled by both the v and c to be identical, and thus the relation was true for any distance whatever, including infinity and zero.

He then decided to expand the equation, so that:

$$\left(\frac{\Delta t_c}{\Delta t_v}\right)^2 + \left(\frac{\Delta T}{\Delta T'}\right)^2 = 1$$

But then, one could use the value Mass from the (E,K) space, so that (since  $c = C$ ):

$$\left(\frac{c\Delta t_c}{c\Delta t_v}\right)^2 + \left(\frac{C\Delta T}{C\Delta T'}\right)^2 = 1 \quad (\Delta t_c \leq \Delta t_v), \text{ and}$$

$$\left(\frac{M_{Father}}{M_{Father \text{ and Son}}}\right)^2 + \left(\frac{M_{Father}}{M_{Father \text{ and Son}}}\right)^2 =$$

$$(\text{Space} - \text{time} \text{ ratio})^2 + (\text{Energy} - \text{Momentum ratio})^2 = 1$$

This result, of course, is identical to Solution 2 (in which  $\Delta t_v = \Delta t_c$ ), since

$$\left(\frac{\Delta x_v}{\Delta x_c}\right)^2 + \left(\frac{C\Delta T}{C\Delta T'}\right)^2 = 1, \quad (\Delta x_v \leq \Delta x_c)$$

The theoretical description, then, was of two Relatives, which together made up one family, but that it was impossible to tell the separate contribution of the Father and Son, since the ratios were defined solely in terms of the Father by the “speed” or “Mass” of God..... This was a disappointing conclusion, since one could not tell which description applied solely to the Father and which to the Son. (Note that since the quantities are ratios, the dimensional analysis is consistent by default).

The Bankers decided to call these relationships the Special Theory of Relativity, but they began to suspect a scam..... Especially if there were more Family involved...

## God's First Universe (Plan A Redux)

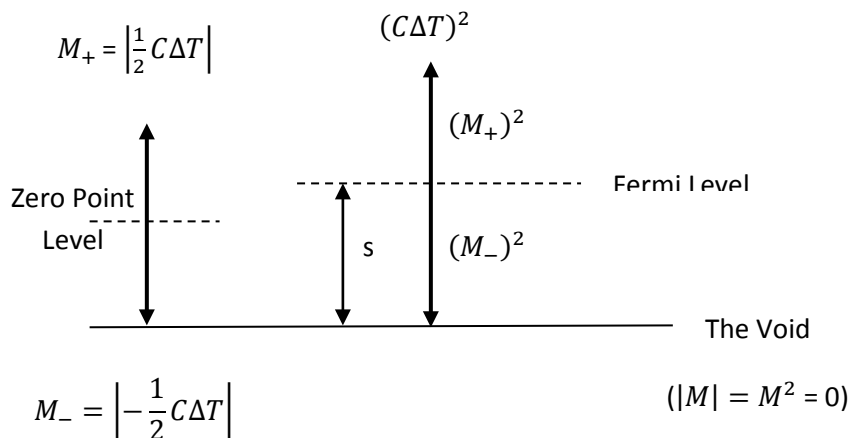
The Bankers had approved credit for God to create His first Universe, and had even given him permission to combine the positive and negative Mass to start it off with a Big Bang. However, they had misgivings about the Universe He had created with his Son, and suspecting a scam, decided to review the first Universe to understand its history.

Their first stop was the Energy Warehouse called the North Pole, and managed by Santa Clause. (The bankers called it a Mono-Pole, since the other Pole (the South Pole) had never been found. In fact, some thought the warehouse didn't even exist, but others thought that a man named Bishop Berkely may have discovered it by stubbing his toe on its doorstep while trying to convince his friend David Hume that he, himself actually existed (whatever THAT meant)...

Their first concern was that they had accepted God's Word on the fact that He had used equal amounts of positive and negative Mass in creating his Universe, and they wanted to understand Santa's process in determining the balance.

Santa began by explaining that his term for Mass was "Charge", and that others used "Matter/Antimatter", but they were all the same stuff, as far as he was concerned. He continued by warning the Bankers (as he had warned God) that positive and negative mass ( $M_+$ ,  $M_-$ ) were independent, but highly volatile, and could explode if put into contact with each other. Nevertheless, Santa and his Workshop had develop a testing method called "taking the square", which would allow a direct comparison of the amounts of (+,-) Mass without putting them in contact.

The test equipment involved placing the (+,-) Mass on top of each other ( $\frac{M_+}{M_-}$ ) on top of each other. This container was then "squared", which removed the distinction between + and - so the concoction wouldn't explode, but still allowed Santa to preserve their identities ( $\frac{(M_+)^2}{(M_-)^2}$ )



Note that the zero point is not the same as the void; the zero point has equal Positive and Negative Masses (related to the Force used to bring them together at the Origin), but the Void has no Mass at all.

If it were done correctly, even if there were more negative than positive mass, the test equipment would adjust itself until there were equal amounts above and below the zero point. But the most important effect of the squaring effect is to elevate the whole structure so it rested on top of the Void . The level between the  $(+, -)^2$  Masses was now called the “Fermi” level (for reasons yet unknown).

Then God was could be allowed to construct His first Universe from the Mass he was allotted according to His credit by the relation  $\left(\frac{(M_+)^2}{(M_-)^2}\right) = 1$ , so that  $M_0 = \left(\frac{(M_+)^2}{(M_-)^2}\right) M_0 = \frac{(\rho_+ C \Delta T)^2}{(\rho_- C \Delta T)^2} M_0$ , where  $\rho_+ = \rho_- = \rho = 1$ , where  $\rho$  is a “density” that refers to the components of each kind used,  $C = \frac{\Delta M}{\Delta T}$  is the “Speed” of God (“God-Speed”), which Santa called “Light”, and  $\Delta T$  the “time” to create the Universe (which God sometimes set to “1” to confuse people into thinking He had done it instantaneously).

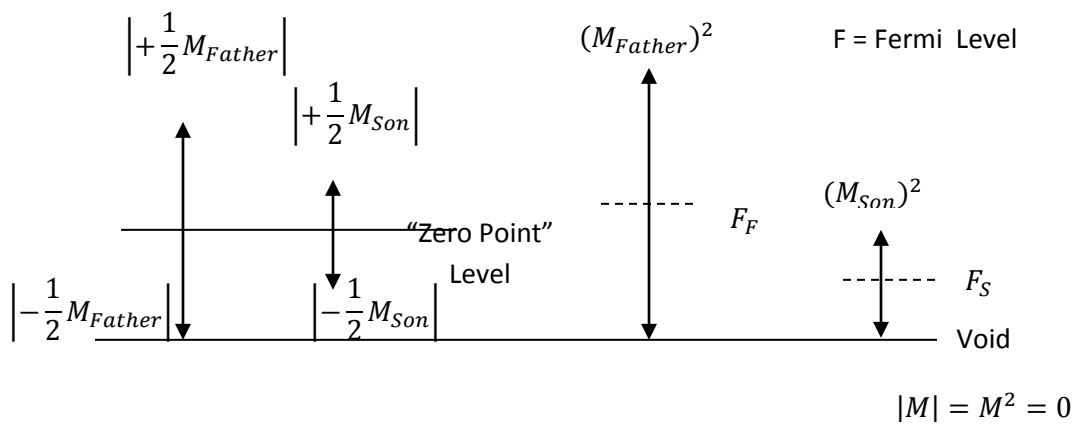
The idea was that the Universe would actually be created when God removed the test equipment, which (hopefully) would result in a “Big Bang”. (God really loved Bruce Willis films.)

Santa then informed the Bankers that the vertical axis is called a “potential”, and the potential between the Fermi Level and the Void is designated by the letter “s”; Santa cautioned that some refer to “s” as a “space-time” separation, but to do so is confusing in the current context.

## (Plan B Redux)

The Bankers then mentioned that the second universe was the one they had suspicions about, since they were concerned that the Family of Father and Son might be cooking the books. Santa asked them if the Mass of the Universe was the same in both cases, and the Bankers answered that the procedures seemed similar, but that the combination of Father and Son meant that the total mass was given by  $CT'$  instead of  $CT$ , and they needed more information about the details.

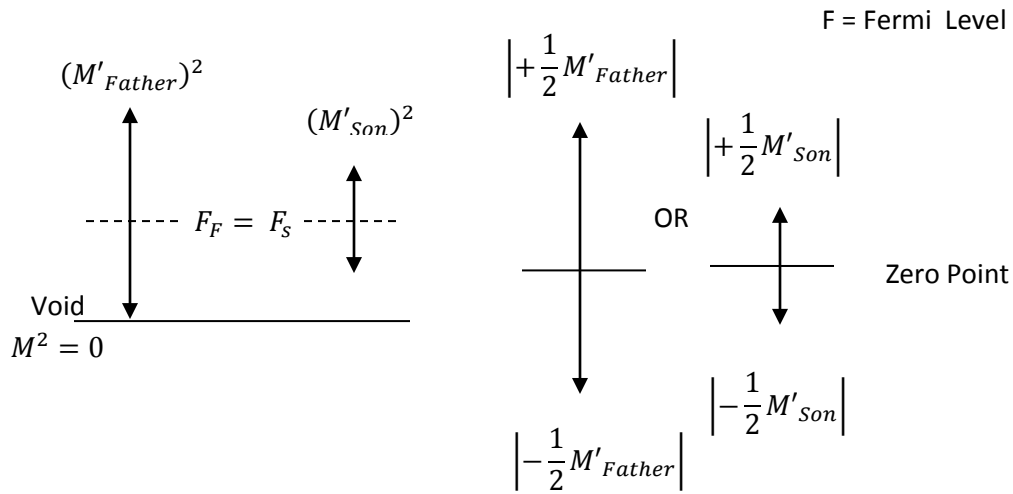
Santa responded "From what you've told me so far, I don't think there was a scam, but Speed of God may have changed." He then described how he had given out the positive and negative mass to the Father and Son:



At this stage, the Father and Son had defined their Mass creation rates differently, so that  $\Delta C = \Delta c = \frac{\Delta M_{Father}}{\Delta T_{Father}}$ , and  $\Delta V = \Delta v = \frac{\Delta M_{Son}}{\Delta T_{Son}}$ .

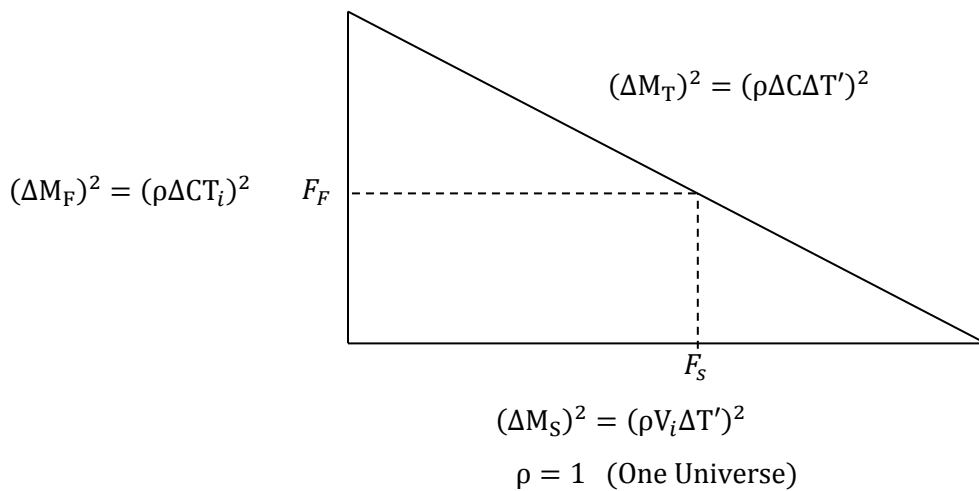
The Bankers immediately asked if the differences in potential (Fermi Levels) with respect to the Void could be part of a scam. Santa responded that since the Father and Son performed independently, and since the positive and negative masses were always equal, then the Fermi level could be adjusted so it was the same for both by adjusting each of the contributions of Father and Son.

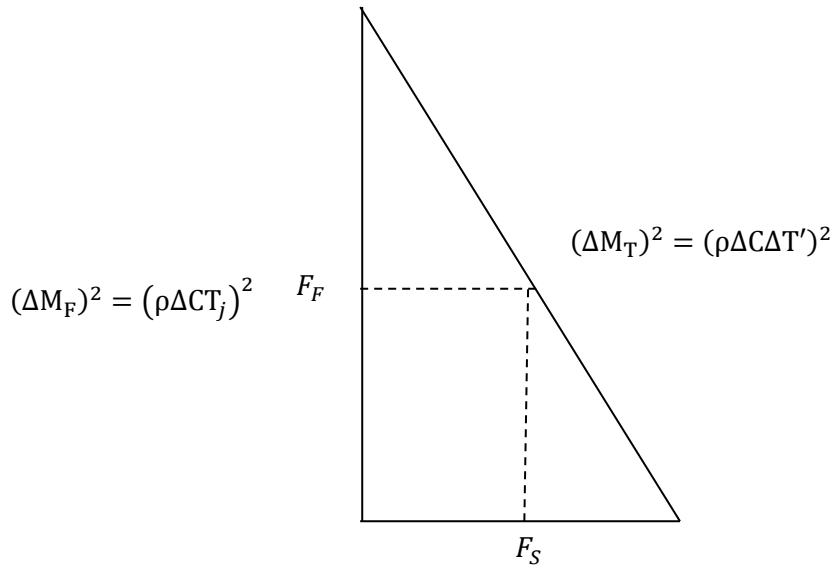
The Bankers were still confused, so Santa continued: “By adjusting the Masses, we can set the Fermi Levels of Father and Son equal, and then reposition them so that  $s=0$  with respect to the Void, where the balance between positive and negative Mass has been preserved.



This is possible, because we have defined V as a percentage of C. Note that C could have been defined as a percentage of V, in which case the roles of Father and Son would have been reversed.

Consider the following diagram, where the Fermi Levels have been marked, with the total Mass of the Universe a constant (conserved). This leaves us free to declare T and V variables, which will change the legs of the triangle, but not the hypotenuse. The vertical leg represents “Rest” (Father’s) Mass”, and the horizontal leg represents “Kinetic “ (Son’s) Mass, which can change according to the “Time” period declared by the Father, or the “Rate” declared by the Son.





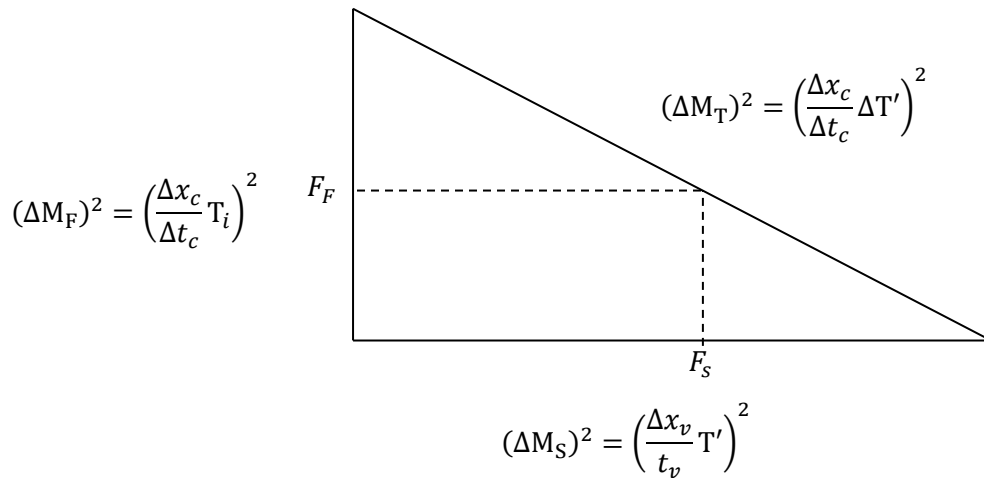
$$(\Delta M_S)^2 = (\rho V_j \Delta T')^2$$

$$\rho = 1 \text{ (One Universe)}$$

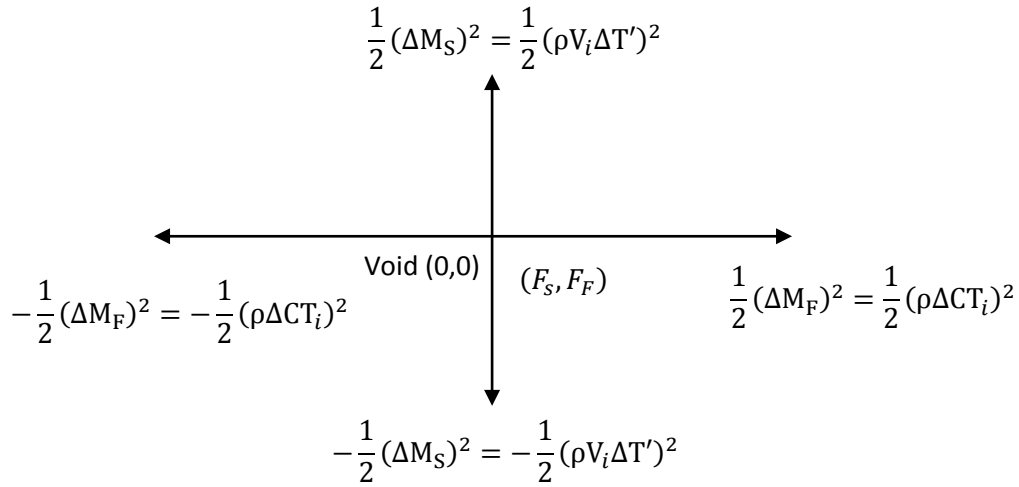
Note that the Fermi levels remain in the center of the legs, so that positive and negative mass are equally divided. Note that if either of the Relatives' legs go to zero, then the Universe was created by the other one. The relation can be maintained if the rates are deconstructed as in Solutions 1 and 2. For example, for solution 1 ( $\Delta x_c = \Delta x_v$ ) the scaling rate relationship

$$\left(\frac{\Delta t_c}{\Delta t_v}\right)^2 + \left(\frac{\Delta T}{\Delta T'}\right)^2 = 1$$

still holds.



Finally, the diagrams can be oriented about the juncture of the Fermi Levels, which dispenses with the Void.....



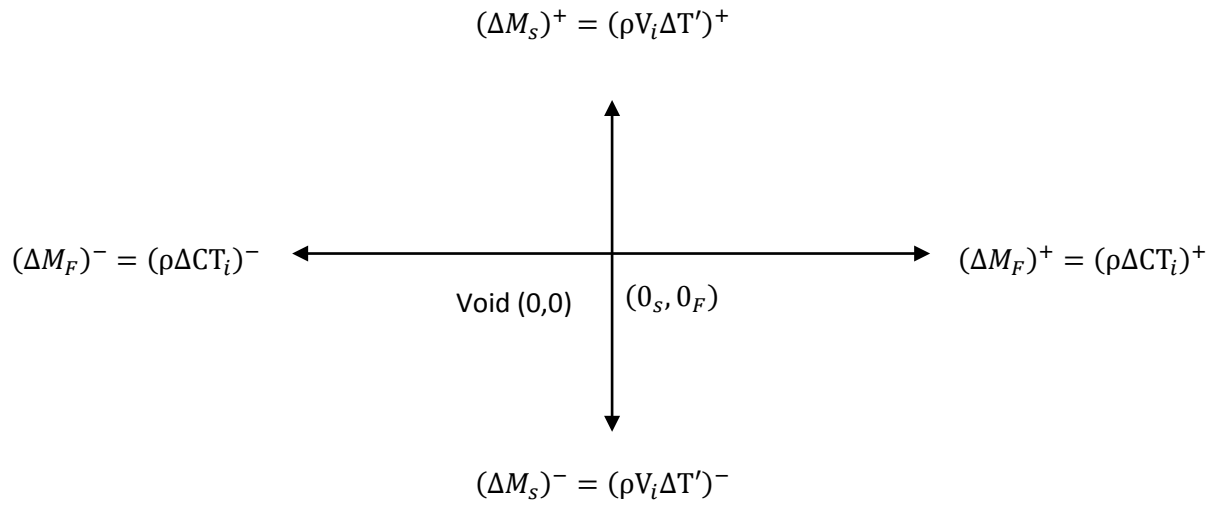
$$(\Delta M_T)^2 = (\rho \Delta C \Delta T')^2$$

$$\rho = 1 \text{ (One Universe)}$$

Here the Void (0,0) indicates no Mass of either Father or Son (there is no Universe), and the juncture of  $(F_S, F_F)$  is an “event” (Universe Creation) (“somewhere”, “some-when”) in the Void. Of course, “space-time” really has nothing to do with the creation of the Universe, since it all happens in (E,K) “space”.

If the positive and negative could be imagined as separate (i.e., without an imaginary explosion), one could remove the imaginary “squaring” test equipment, so that the diagram can finally be broken down into a relation between positive and negative Mass.





$$\Delta M_T = \rho \Delta C \Delta T'$$

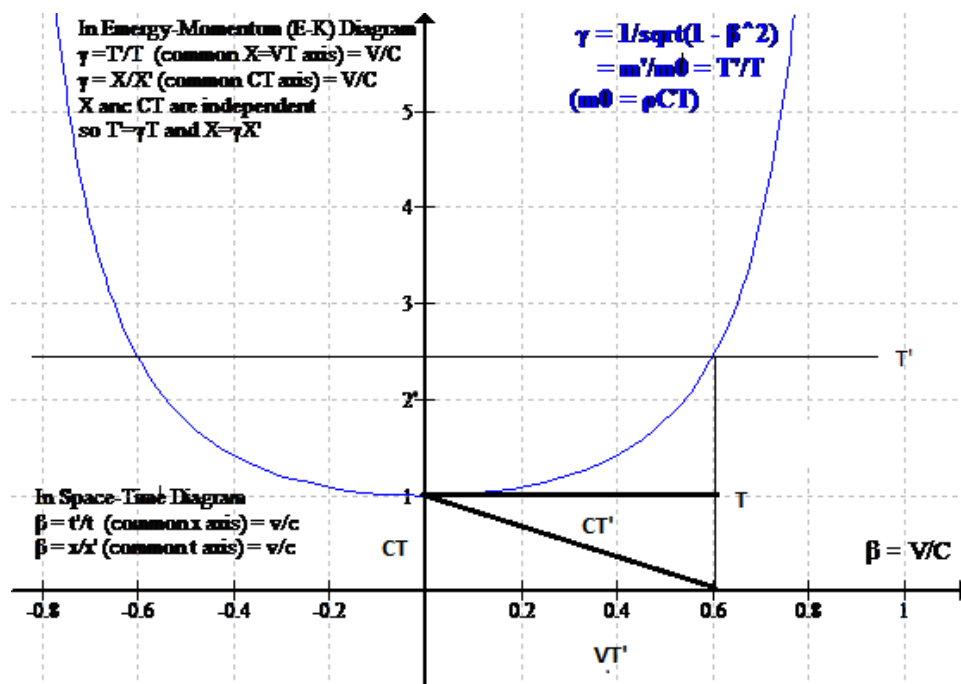
$\rho = 1$  (One Universe)

The Bottom Line, Santa finished, was as long as the Total Mass of the Universe was the same, there might be intense family squabbles about who did what, and for how long, and when, but those were family matters, and the Bankers agreed that they had no dog in the fights between members of that family, since they were only interested in if the books agreed.

## The Family Masses ( $\rho = 1$ )

The relation between the Family Masses is shown in the diagram below (I'll do a better one later).

Consider  $T$  and  $T'$  fixed values for a given Universe. Then the relation between  $T'$  and  $T$  is given by  $T' = T * \Gamma(V/C)$ , which is mapped by the blue hyperbola below. The relation between the Masses are given by the triangle below the parabola. Note that both positive and negative values of  $VT'$  are graphed, but negative values of  $CT$  are not (a negative value of  $CT$  would mean that Santa Claus was sending mass/charge back out to wherever he got it; in particular, he is not giving it to God to build anything).



Here  $C$  is represented as a vertical line, and  $V$  as the tangent to the hyperbola. Note that  $V < C$ ; as  $T'$  (the contribution of the Relative Son) increases in relation to that of the Father,  $T$  becomes less important to the total Mass, but never quite disappears.

## The Field Perspective

Note that the “Time Dilation” equation can be broken down into its components in two “dimensions” in Space-Time, without deconstructing velocity (v,c) into time-space components.

Solution 1: This diagram can also be seen from the perspective of three “photons” emitted from the origin along the different axes. The “photon” traveling at  $V\Delta T'$  takes longer to travel the distance  $C\Delta T'$  than the photon traveling at  $C\Delta T$ , and neither of them go as far as the one traveling at  $C\Delta T'$ .

Solution 2: The photon traveling at  $V\Delta T'$  doesn't get as far as the one traveling at  $\Delta T$ , and neither of them get as far as the photon traveling at  $C\Delta T$ .

The “Time Dilation” equation can then be seen as a relation between the mass-areas of three non-interacting circles:

$$\pi R_T^2 = \pi R_C^2 + \pi R_V^2,$$

so that

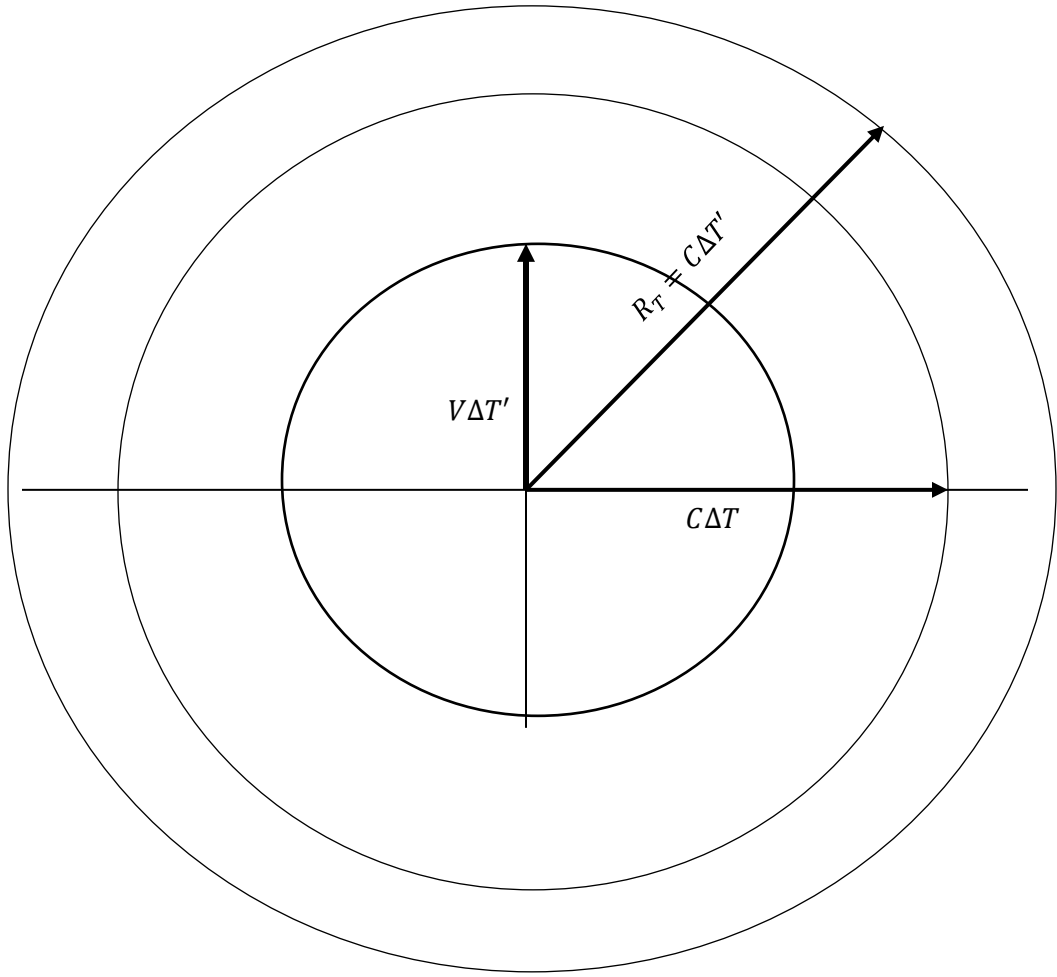
$$A_{T'}^2 = A_0^2 + A_V^2 = (\rho C\Delta T')_T^2 = \rho C\Delta T_C^2 + \rho V T'_V^2 = M_{T'}^2 = M_0^2 + M_V^2, \quad \rho = 1$$

The Universe is created as areas of circles, starting from (0,0) (anywhere, any-when). If only the Father is involved, only one Universe is created. If the Son is involved, a sub-Universe is also created, defined by the constant “Creation Rate” of the Father, with that of the Total Family defined by the “Time Dilation” equation.

The Created Universe can be thought of as a “Particle” with all its mass at the Origin, or as a “Field” with an “Area” in Energy-Momentum space, since the above equation results in”

$$E_T^2 = M_T^2 C^4 = P^2 C^2 + M_0^2 C^2$$

For a given Family united by a common  $C = c$  (defined by unique coordinate system in space-time), one often sets  $C = c = 1$ , but be afraid... be VERY afraid.. of setting physical parameters = 1 (like C) if you want to understand stuff later.)



This description corresponds to a transformation in which the independence of space and time (in relation to the geometry) can only be assumed at the origin and the axes for a common value of velocity in terms of C. Also, note that the “Radius” describes a half a diameter, with positive and negative position values relative to the center, as well as a circumference, with velocity tangent to the circles, both positive and negative around the circumference (e.g.  $Circm.T = 2\pi(R_T) = \pi(D_T)$ )

The Radii are all perpendicular (independent) to the circumferences of their respective circles.

### Co-variance Vs. Contra-Variance

Consider again Solution 1 in Space-time, in which a common length was used to “connect” the velocities of v and c, so that time was the variable used to define the relative densities of light compared to an inertial coordinate as a ratio (the “time dilation” equation):

#### (Field description, common “length”)

$$t_v = t_c \Gamma_{v,c} = \frac{t_c}{\sqrt{1-\frac{v^2}{c^2}}}, x_v = x_c \text{ and compare it to the relation derived by assuming from the beginning}$$

that V is independent of C with scaling factors T and T’:

#### (Particle description)

$$T' = \frac{T}{\sqrt{1-\frac{V^2}{C^2}}}, M' = \frac{M_0}{\sqrt{1-\frac{V^2}{C^2}}} = M_0 \Gamma_{V,C}, M_0 = \rho CT, \quad \rho = 1$$

Note that the equations have the same form, but have different physical interpretations. In space-time, the role of Mass is given by a density  $\Gamma_{v,c}$  associated with the common length  $x_v = x_c$  which is invariant in space-time (does not change when moved around the space-time plane). The density, however, is changed by the time scaling factor:  $\frac{t_v}{t_c} = \Gamma_{v,c}$

In the second case, the density is assumed constant (equal to 1 for all particles of the same rest mass), where the ratio defines the relation between Rest Mass and Total Mass:

$$\frac{T'}{T} = \frac{M'}{M_0} = \frac{1}{\sqrt{1-\frac{v^2}{c^2}}} = \frac{M_{Father+Son}}{M_{Father}} = \Gamma_{v,c} \text{ Note that (as in Newton’s laws), this relation is independent of}$$

space-time (it is the Mass that is invariant, and independent of space-time position and length/period.

**Because the Mass transforms in the same way as coordinate density, this “time” transformation is said to be “covariant” with respect to the coordinate system.** This transformation is at the heart of Quantum Field Theory, and it is the reason that the T (Mass scaling factor) is interpreted (incorrectly, IMO) as “time” t in the “Wave” equations, starting with the Klein-Gordon equation, through Dirac, to the Higgs representation). **Since the latter interpretation is independent of the coordinate system, it is called a “vector” transformation (as opposed to the field interpretation which represents a scalar field, even though it is covariant with that of the vector)**

**(Field description, common “time”)**

In the case of Solution 2, we have that

$\Delta x_v = \frac{\Delta x_c}{\Gamma_{v,c}}$ ,  $t_v = t_c$  and the relation between the space-time parameters  $\Delta x_v$  and  $\Delta x_c$  is inverse to the density  $\Gamma_{v,c}$

**This “length” transformation is then said to be “contra-variant” with respect to the coordinate system.**

Note that the covariant transformation depends on the equality of lengths, which define the velocity dependent density at the coordinate point (i.e., all points in the velocity “frame”) If the length  $x_c$  varies, then so will the frame “density”, and so will  $x_v$ . This will change the “times” in relation to the original as well, so the rest mass will change (the point coordinate dynamic description of the particle in the frame will change)

If **both** the “length”  $x_c$  and “time”  $t_c$  that define the velocity  $c$  are allowed to vary, then the density must change since there is an acceleration (change) in the velocity  $c$ . (the reference velocity has changed). That is, the relation  $\beta = \frac{v}{c} \neq \beta'$  has changed.

Note that these transformations apply to individual points in a given inertial coordinate “frame”; it is by no means necessary that all points in the coordinate system have a mass density associated with them. (i.e.,  $c = 0$  at some coordinate points common with the velocity frame  $v=0$ )

This means that the speed of light has changed, and with it the permittivity and permeability relations that form the foundation of Maxwell’s Equations. They can be realigned if either variable or the density is changed back in order to compensate. That is why Maxwell’s Equations are said to be consistent up to the introduction of a scalar field. The scalar field is explicitly subtracted out to form the Electro-Magnetic field tensor that forms the foundation of Quantum Field Theory (which now rests on particle counts, virtual or not)...

## “The Twin Paradox” -

By using the assumption that the "Time Dilation" equation refers to space-time, a paradox is often raised: If Mary travels to a star and Bob remains at home, then Mary will age more than Bob when she returns. It is often stated that the paradox is resolved by considering the acceleration of Mary's "turnaround" at the star.

This “explanation” misses the point. There are three perspectives, all of which include the concept of mass:

$$\text{Let } \Gamma = \Gamma_{(x,t)} \frac{1}{\sqrt{1-\frac{v^2}{c^2}}} = \Gamma_{(V,C)} = \frac{1}{\sqrt{1-\frac{V^2}{C^2}}}$$

( $\Gamma$  is interpreted as a local “density” in space-time, but directly as a Mass modifier (scalar potential) in (V,C)

### Space-Time domain (x,t) (scalar potential)

1. **Common "length"** (defining v in terms of c) ( $\mathbf{x}_v = \mathbf{x}_c$ ). Here the "length" is Mary's distance to the star, but STR merely says that a photon makes the round trip faster than Mary, and Bob is a photon that remains "at home". I.e., Mary has mass that is defined by Bob (who is also god...:-), but their common velocity is only defined when Mary returns - since the beginning and end points of the journey are the same for both Mary and Bob. That means that Mary was subject to a space-time "density" on her journey, and Bob was not. However, this density (gamma) is defined by considering the journey as a whole, and together, they have a new mass  $ct'$ , where they both have the same "clock" ( $t'$ ), but don't go anywhere. So Mary and Bob (in terms of the system as a whole) age together by a factor  $t'$ .

$$x' = \frac{x}{\Gamma_{(v,c)}} \quad (\text{contravariant})$$

2. **Common "time duration"** (defining v in terms of c) ( $\mathbf{t}_v = \mathbf{t}_c$ ) - In this case, both leave the same coordinate point in space-time. Mary encounters a density right away, and so doesn't go as far as a photon (Bob), but they again arrive back at the same coordinate point in space after having traveled different distances; their common time ( $t'$ ) again being interpreted in terms of Mary's trip density in terms of Bob's.

$$t' = t\Gamma_{(v,c)} \quad (\text{covariant})$$

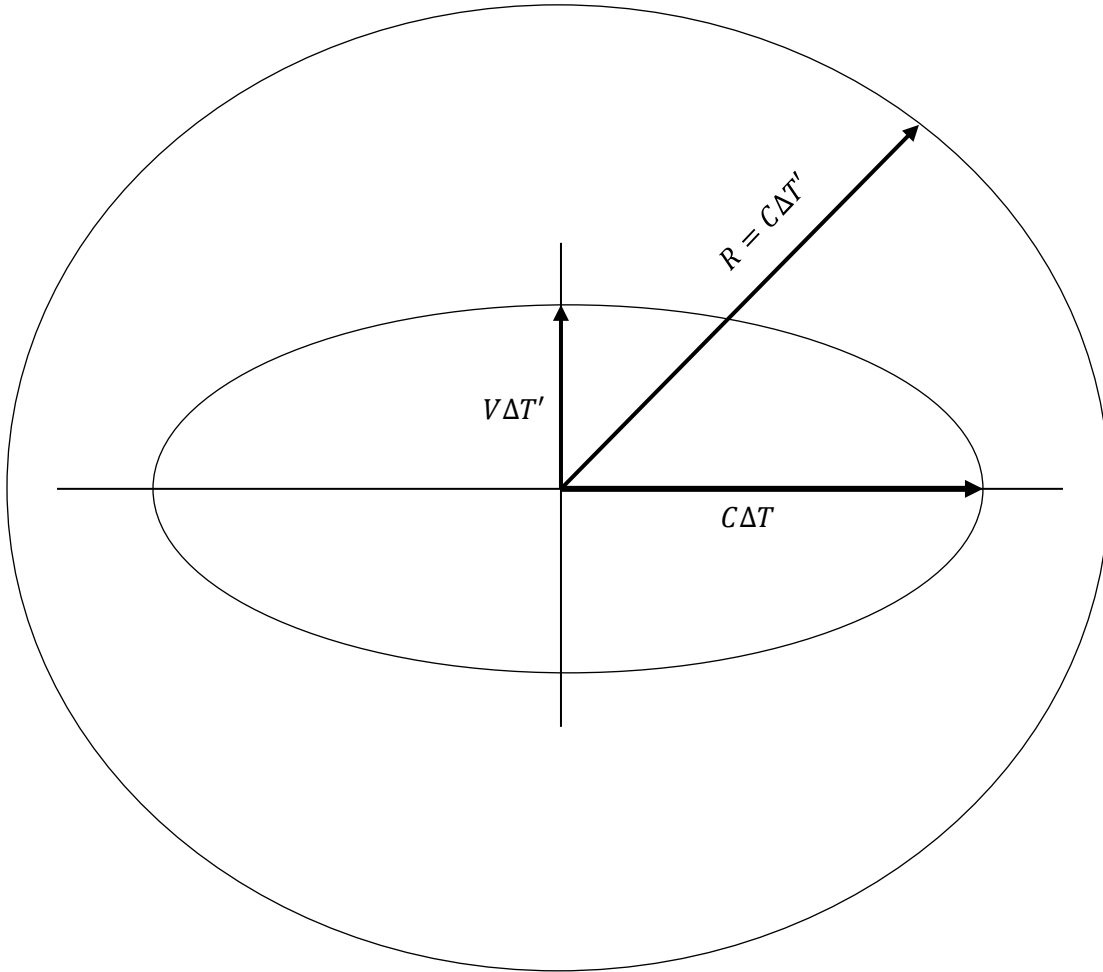
### **Energy-Momentum Domain (E,K) - vector space (scalar "density" $\rho = 1$ )**

3. Common C defining Mass ( $M_0 = \rho CT$ ),  $\rho = 1$ ,  $M'(V, C) = M_0(C) * \Gamma(V, C)$  In this case, God creates Mary and Bob with different masses at the same coordinate point in space AND time;, but Mary's mass determined by a local density in terms of Bob's; neither of them go anywhere, any-when, but Mary is created with more mass than Bob (whose mass is defined by T), and their common Mass is determined by the factor T'.

$$T' = T * \Gamma \text{ (no coordinate system)}$$



## Contra-Variance (The Creation/Destruction of the Universe )



Consider the transformation from  $\Delta T = 0$  (Starting from “any-when”) for  $0 \leq C\tau \leq C\Delta T'$  to  $\Delta T = \Delta T'$  (the completion of Universe creation), where  $\tau$  signifies the progress of mass addition. This transformation (the addition of Masses) varies according to the coordinate system that describes the “speed” of light;  $\Delta c = \frac{\Delta x_c}{\Delta t_c}$  and  $\Delta v = \frac{\Delta x_v}{\Delta t_v}$ , so that  $\Delta\beta = \frac{\Delta v}{\Delta c} = \frac{\Delta x_v \Delta t_c}{\Delta t_v \Delta x_c}$ . Depending on which solution is taken to characterize the relation of  $v/c$ , the (increasing) mass is given by the relation:

$$\Delta M_{(Total)'} = \Delta M_0 \Delta \Gamma = \frac{\Delta M_0}{\sqrt{1 - (\Delta\beta)^2}}$$

That is, the total Mass of the Universe depends directly on  $x_v$  and  $t_c$  and inversely on  $x_c$  and  $t_v$ , that is, it varies with the coordinate system. The transformation during the process is called “**contra-variant**”.

## Co-variance - The Existence of the Universe

Consider a transformation that takes place between the time the Universe has been created and the “time” ( $\tau$ ) that it is destroyed; the time during which the total Mass is constant ( $M_\tau = C\Delta T'$ ). During this period ( $\tau$ ), the “speed” of light is  $C$ , and the total time can be taken to be equal to 1 ( $\Delta T' = 1$ ). Any change in the internal structure of the Universe now must preserve  $C$ , so that the coordinates must vary counter to the way they did when creating the universe. That means that  $\beta = \frac{v}{c}$  must be constant as the coordinate scales change, so that a change “one way” must be balanced by a change “the other way” (“The Lord Giveth and the Lord Taketh Away”).

Any coordinate transformation that occurs while the total Mass of the Universe is a constant is then called “**co-variant**”. Such a transformation is also called a “Gauge” Transformation.

(Note: I may have gotten “contra” and “co” backwards, but if not, they should be).....:-)

(The “contra-variant” coordinates are modeled in the dual space of tensor transformations on vectors as coordinate functions instead of vectors).... During the existence of the Universe, contra-variant transformations are irrelevant unless a Family is again involved...

## Particles Vs. Fields

The temptation is to equate  $V$  (a (Son’s) perturbation) with  $v$  (a velocity in Space-Time). However,  $V$  is an additional Mass over and above “rest” mass. Thus, one might think of  $C\Delta T$  as “Field” and  $V\Delta T'$  as “Structure”, for  $V < C$  (i.e., inertia). However, consider the case  $C\Delta T = V\Delta T'$ . At  $\Delta T'$  there are two equal “Masses” (or “Fields”), and more masses as  $T'$  and/or  $V$  increase. In fact for  $V > C$ , the roles of Father and Son are reversed.

One can conceive of even more Family members, each defined with their own rates, but “connected” (affine connection) through the constant  $C$ . One can also imagine different Universes with different Gods (i.e.,  $C$ ’s) (and different Families), non-interacting with each other “parallel Universes”.

(To be discussed)

Coulomb’s Law

Ampere’s Law

The “Energy” of light

Maxwell’s Equations

(Derivation and Interpretation of  $C$  as space-Time “velocity”)

Matter vs. Anti-Matter

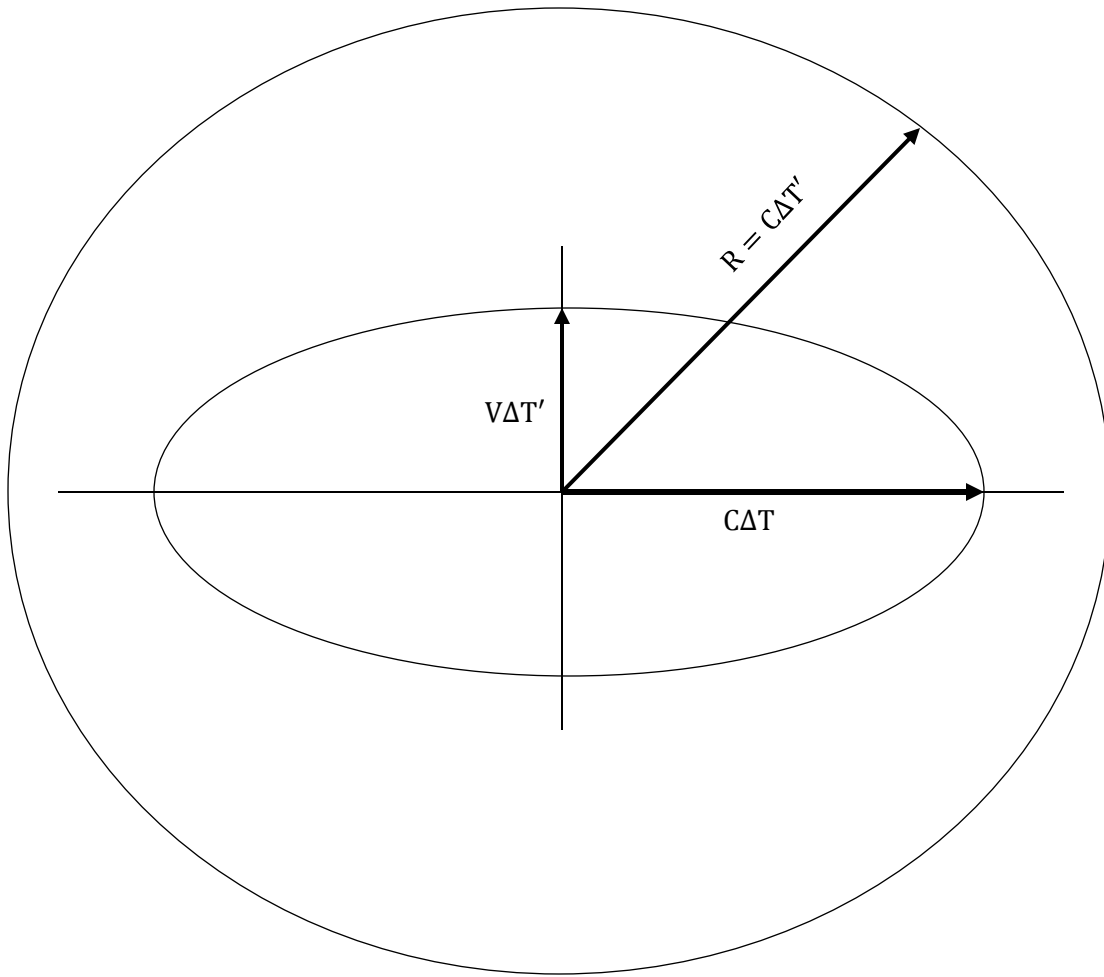
=====  
It seemed like the all the questions had been resolved, when one of the younger bankers noticed something peculiar about one of the important equations.....  
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**(To be Continued.....)**

### **Comment on GTR**

As an introduction to the General Theory, one can view it as the equation of an ellipse, with major axis  $C\Delta T$  and minor axis  $V\Delta T'$ , enclosed in a circle with radius given by  $R = C\Delta T$ . The "Time Dilation" equation then describes the total area of the ellipse in terms of its major and minor axis, with  $v/c$  tangent to the perimeter of the ellipse, and the axes at the center of the ellipse (the "Origin").

Note that if  $V\Delta T' = C\Delta T = R$ , the "ellipse" becomes a circle. In addition, the major and minor axes are the only locations that are perpendicular (independent) to the periphery of the ellipse.



Mass can be introduced conceptually by a “density”  $\rho = \rho(x, y)$  instead of  $\rho = 1$  (as for the circles), so that mass can be modeled as local curvature at the periphery; however the mass will change as a function of position if the geometry remains that of the ellipse – and in particular, any attempt to describe the system only in terms of major and minor axes meeting at the origin will fail (the case of GTR).

(For most “Linear” gravity calculations, one of the masses is assumed so large that it is unaffected by peripheral density, so the c.m. remains at the origin, and the effect is that of the change in geometry at the periphery, rather than that of the total system.

The concept that the ellipse with given axes can be expanded provided the tangents are preserved means the geometry doesn’t change – however the areas of the enclosed circles will change even if the total circle does not.

However, this description cannot describe the action around the periphery without the elliptical equations; this does mean that the total mass around the periphery can be described, but not for a single particle, which will interact with the center of mass (that is, the normal to the periphery will not terminate at the center of the ellipse. That is, in a massive system, for a particle on the periphery, the center of mass will be displaced, and the connection to the center of mass will be broken.

It is possible to define a transformation on the ellipse such that all points at the periphery meet at the center, but that describes the circle  $R = C\Delta T'$ .

## The Relativistic Quantum Field Theory Wave Equation

Planck's Constant

The Klein-Gordon Equation

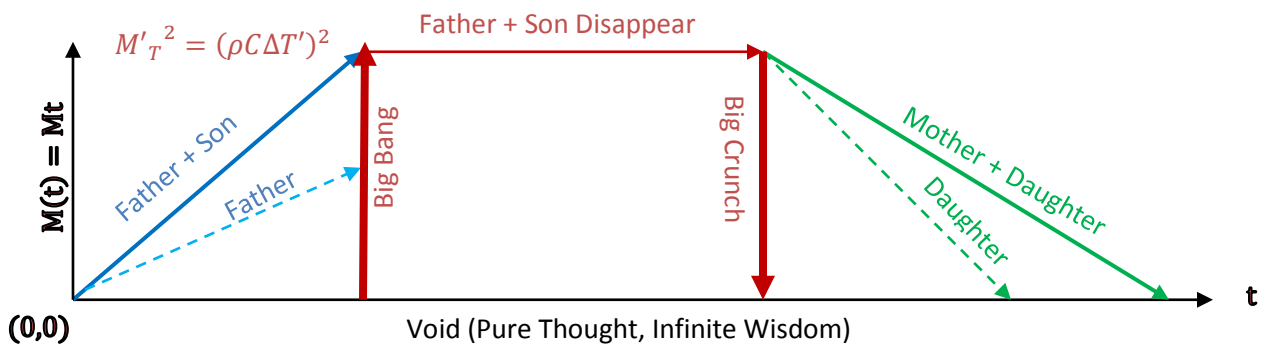
Green's function

## The End

In the End, however, the Bankers could see no Profit in the Universe that the Father and Son had created; and the fact that they had disappeared was making them suspect that the Creation of the Universe had actually been an inside job.

Not only that, but the very existence of the Universe was the most undeniable refutation of the Law of Conservation of Energy and Momentum (especially if one knows what that Law entails)...

They also felt that the Universe was cluttering up the Void (which they also liked to call Pure Thought or Infinite Wisdom). They were about to destroy the Universe in a Big Crunch (by setting the density  $\rho = 0$ ), when the Mother and Daughter came home first and discovered what a mess the Father and Son had created, without even asking them for their feelings or consulting with them. "Hell hath no fury like a woman scorned", much less two women, so they destroyed the Universe and cleaned up the mess (including a number of stray "bits" before the Bankers could arrive at the coordinate point.



**M** is given to God by Santa Claus, and the Family Creates the Universe in its own time **t**, at a single coordinate point in space-time at which  $c$  is defined by  $c = v \sqrt{1 - \left(\frac{T}{T'}\right)^2}$ ,  $(T' = T) \Rightarrow (v = 0)$ .

Note that  $v = 0$  does not imply  $C=0$ , because  $C = \frac{1}{\sqrt{\epsilon_0 \mu_0}}$  at that coordinate point (Santa Claus was the one who actually dragged the (Mass) "charges" and "current loops" to that point, which is described in the user's manual written by Coulomb, Ampere, and Maxwell. (Newton only thought there were Masses (charges)). That's what Santa Claus said, anyway.....

**(My Comment – GTR relation):**

Note that new variables can be assigned here, so that  $\Delta X = \Delta C\Delta T$  ,  $\Delta X' = \Delta V\Delta T'$  , and  $\Delta S = \Delta C\Delta T'$  , where different Fathers and Sons are defined, creating different Universes. This relation is sometimes called a “space-time” metric, in which identification the identification  $\Delta x = \Delta X$  ,  $\Delta t = \Delta X'$  , and the space-time “distance”  $\Delta s = \Delta C\Delta T'$  is made.

$$\Delta x^2 = \Delta s^2 - \Delta t^2$$

“Curvature” is then defined as an excursion from the linear expression of the metric, without reference to (E,K) space. To make this “consistent”, the above quantities are reduced to infinitesimals at the coordinate point , so that one can “ignore” the Mass of God’s Work.(i.e., C)

$$dx^2 = ds^2 - dt^2$$

The curvature then corresponds to an unsourced interaction (new Family member), which can be accounted for by “flattening” the space (i.e., including the new Mass in (E,K) space, and the local “curvature” means that one is ignoring any changes in the global Fermi level.

**Philosophy**

Science suggests that after the Big Bang, god smoked a cigarette, rolled over, went to sleep, and hasn't been heard from since.

However, the Bible teaches that he woke up, knocked up a poor carpenter’s fiancé, convinced the locals that it was a virgin birth, and then threw his illegitimate son under the bus when he turned out to be a liberal. The locals testified that the son appeared to them after his death, a story that perseveres to this day, often as images on the crusts of toasted cheese sandwiches.

God has strong Republican CEO core values...

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Just because you’re schizophrenic doesn’t mean everything isn’t a figment of your imagination.

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When you achieve the all-encompassing mellow California surfing “WOW”, you’ll never blow your Buddhist cool.....

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## Bottom Line (Incoherent Ramblings):

This is just a quick note to indicate the direction the analysis is taking. I'm 72, and don't know how long I'm going to be around, so don't have any time at all for peer review, publication, or even getting a PhD (which, if I'm right, wouldn't have helped much anyway).

The Shapiro analysis on this site will also be relevant, but there is still work to do on that, so all of this is ongoing until I get hit by a truck.....:-)

The Hubble constant is wrong, since it depends on first order  $v/c$ , interpreted as Doppler, and justified as "relativity". One of the most important tenets of STR is that the velocity of light be independent of that of its source; (basically meaning that the emission time of a photon is very small compared to the time it took to create the Universe (T).

If one is trying to determine  $x$  (i.e., "R") from a distant point, one cannot use "Red Shift" since it is an energy issue, not a space-time issue. The physical reason is the QM assumes conservation of energy OR momentum. Energy ( $E_t/h$ ) is relevant at the source and center (since time is derived out in that context), and Momentum ( $P_x/h$ ) is relevant during the journey, since space is derived out in that context. They must be equal if nothing has happened during the journey (one cannot tell where the particle is) or at creation/destruction (the photons are equal at the source and sink.)

(For a single particle that is conserved,  $p_x/h = E_t/h$  the description is complete. But if the  $h$  associated with either one is different from the  $h$  after the measurement has been taken, then "something has happened" during the intergalactic journey.....

In any case, one cannot tell the mass of either our own, or a distant galaxy at the quantum level, but if the galaxies were of equal mass they would have the same "Velocity" – i.e., total mass, and there would be no red shift (If our galaxy and the distant one are the same, the sources and sensors are equal).

The "red shift" could only happen during the journey of the photon (where any interaction with it can't be observed), which could only come from gravitational "V" – i.e., interaction with other photons (modeled in the large by gravitational field energy). (If space=time is "curved", it can always be stretched back topologically to a flat metric, which implies that the galaxies were different either at the source or at the sensor....

In addition, our galaxy and distant galaxies cannot be assumed to be black bodies observationally, since photons would likely interfere differently according to their place in the spectrum during the journey, even if the "temperatures" of the local and distant galaxies could be assumed to be the same.

This (2<sup>nd</sup> order) argument is still Copernican, because space and time are not relevant in the definition of velocity; only the mass of light at the source, sensor, and during the journey (other methods may determine the travel distance, but other assumptions must be made)

IMO, the Hubble law comes from a misunderstanding of the foundations of Special Relativity and its extension to General Relativity (where if Space-Time is curved, then God must be involved... or other

photons from “somewhere” either from us or from stars behind us..... or just from local imbalances in the Universe “dark matter” photons which don’t hit us, but influence the ones that do).

P.S. I’m certain this has been done before, but I’ve never seen it, so I may indeed be just a wild-eyed street person mumbling to myself about my private religion .....