An Exegesis on Time Travel Loops: Intersections of the Mandela Effect and Multidimensional Realms

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ABSTRACT

This paper will emphasize the objective reality through a set of related given phenomena like the most famous Mandela effect and its relation with false memory, confabulation and parallel happenings of day to day world like the Déjà Vu and its mathematical structures which will solely focus on the "Parallel World" or the many world scenario as predicted by the ***String Theory*** *in the form of Multiverse or Multiple Universe through the perspective of physical reality. The mathematical structure has been formed using Topology and Differential Calculus which will interprets the Physics and Philosophy of this type of Happenings. The possible outcome of these phenomena has been discussed thoroughly using logics & mathematics which will insight into a far more in-depth concept by taking us in exploring the* ***2-Time Dimensions*** *[1] (Instead of 1) in this universe and the related outcome or consequences of this more than 1 Time Dimensions.*

Moreover, this paper aims to provide the repetition or Looping of Timelines in a 2D Minkowski lightcone with the help of induced mathematics (exponential wavefunctions) which results in the occurring of same event in a synchronic pattern as predicted by different fiction stories along with a desired property which will pave the way to prove that, 'N" past timelines are connected with "N+1+1……" future timelines and it is the law of nature to select the appropriate future timelines related to the past timelines in which the past timelines will be attached to those future ones which have the least degrees of errors in the "exponential wavefunctions" introduced in this paper. After completing this, we will go to a further analysis of the 'self inflicting timelines and the death loops, which has been a source of major Sci-Fi motion pictures and we will mathematically prove the minimal and the maximal amount of "time loops' in our 4-Dimensional world. At the end we will explore about 'the polynomial wavefunctions' and how it's used in teleporting one 3D object from one universe to another through hyperspace.

INTRODUCTION

For many years String Theory has predicted more than one universe that is a Cosmic Multiverse Scenario or that our universe is just one, floating among the bubble of infinite other universes. A direct prediction of the many world scenarios came From the ***CMB Cold Spot*** or **WMAP Cold Spot** which depicts a region in the far right of the Universe Model that is cooler to about 140 micro Kelvin relative to the ***Cosmic Microwave Background radiation*** that exists throughout the universe [2]. Scientists have claimed that this cold spot in CMBR occurred as a result of the collision of a Parallel universe [3].

As its impossible to conclude the existence of the Parallel Universes directly through observation, however there are certainly more than one ways to conclude this statement through a Popular effect called ***The Mandela Effect*** & ***Déjà vu***.

Let us briefly describe the contexts of Déjà vu before we proceed onto The Mandela Effect.

Déjà vu mainly occurs when we feel something similar like that we have encountered in the past but we generally or in most of the situations can't remember when and where we have experienced this fact. This (according to the context of this paper) has been assumed to be the interaction of the Timelines of the Parallel World or creation of more than one timelines or merely the leaking of times in other dimensional worlds. We
will soon see the mathematics which will describe the timelines merging as a result of the ***Opposite Orientation*** due to the ***Mirror Symmetry*** between our universe and the Parallel universe.

Now, Lets come to the topic of The Mandela Effect. This effect was first coined by Paranormal Researcher "Fiona Broome" in 2010, in reference to the false memory she reported of the death of South African Leader ***Nelson Mandela*** in 1980 as believed by many although he actually lived until 2013.

Here are a few more examples of other false memories encountered by peoples all around the globe.

- ✓ There has been a famous cartoon as "LOONEY TOONS" but most, almost everybody spelled it as "LOONEY TUNES".
- ✓ There exists a lovable cartoon bear family as "The Berenstain Bears" but Peoples but peoples mistake it as "The Berenstein Bears".
- ✓ Many people mistakes the "Monopoly Man" with a monocle in his left eye but in essence there is no monocle attached to his eyes.
- ✓ The famous chocolate "KitKat" has been seen by many People as "Kit-Kat"… although in essence there is no Hyphen (-) between Kit & Kat.
- ✓ There is a famous Pokémon Character called "Pikachu" where many of us remember a 'Black Shade' at the end of his yellow tail but in essence there are no 'Black Shade' in its tail. It's all yellow just like its body.
- ✓ "Curious George", A banana eating monkey which we all assumed to have seen has a tail has no tail.
- ✓ "Monalisa's Smile", A lot of theory have emerged on this but its still not clear whether she is smiling or not. Some people find her smiling while some people not.

…

There are more of these…. The Most interesting is that people recall United States having 51 or 52 States but in reality there are only 50 States. Is this the hint that our time stream is leaking to alternate dimensions or multiple timelines gets merged or whatever we perceive or observe has been a part of the parallel world.

Say it Déjà Vu or Say it Mandela Effect… Is this Possible that there is an alternate but opposite reality to what we have been perceiving. Well, whatever we see or remembers resembles the part of our physical world and objective reality but is there some effect of nature that ***EACH AND EVERYTHING IS A SIMULATION…*** and whatever we are observing as the Mandela Effect are small bugs or glitches in those Simulations. If nature or observable reality is actually a Simulation then it may be possible that our realities are evaporating in alternate universes or there exists small glitches in the ***"Creators SUPERCOMPUTER"*** that forced to perceive this kind of false feeling as Mandela effect.
And one model of Multiverse easily said that our Universe is only one which is just floating among many infinite universes. And infinities tends to repeat itself after a certain point when all the possible permutations of the infinite limits comes to an end. That means at the end of the infinities there will be a similar but opposite (Mirror Symmetrical) World that of our own and what we perceive as Déjà Vu are nothing but the leakage of geography and timelines to that mirror symmetrical universe or worlds.

We will explore how our universe got connected to its mirror symmetrical universe mathematically in details to the next section and we will try to build up a concrete solution of the so called definition of Déjà Vu & Mandela Effect.

Consider an image on your mind..... A person is walking in a streets alone during a setting sun whose hue is coming across the branches of the tree, and there are buildings in both sides of the footpath, it appears as if the parallel footpath is getting merged in the distance due to projective geometry and the streets are half lighten and there is only one person walking on the road.

The interpretation of the image is that every possible variables associated with this picture needs to be perfect.

Nature behaves as a huge supercomputer and it gives the simulations which are too perfect to get distorted.

What are the conditions that need to be fulfilled to prove that this is a perfect simulation?

Condition....

1. The person has a shadow which is inclined as per the position of the sun (that is Sun is in front and the shadow is in back) and cut off in certain regions because of the tree above him.[4]

2. The person is not above the ground, he is stick to the ground which means the Gravitational constant holds not only true for men but for the trees, buildings and everything's around it even lights but it's too small to gets observed.

3. The sun is setting and hence it's in horizon not zenith.

4. Ponzo illusion holds true as the sun irrespective of large distances appears larger than smaller.

5. Sunlight turns into reddish hue.

6. The street where the leaves are not protecting it from the Sun has more light than the other parts.

7. Glasses of buildings reflect the sunlight.

8. The shadow changes with every small perturbation the person made.

9. Although the road is parallel, but the projective geometry shows that the footpaths are appearing closer to each other in the far distance guarded by the men.

10. If any extra person comes into the picture then, the other variables with respond to the new simulations of the added person and the whole scenario changes thereafter.

12. At the left footpath, there is a road marker and that road marker in red is visible than other colors as red light scatters the least and hence visible the most.

THE MOST IMPORTANT PART

These observations exist as because there is an observer. If there is no one to observe then the observations cease to exist.[4]

Each single variable has several variables attached to them to make its position in this earth perfect and each variable when respond to other variables, the previous simulations gets multiplied.

Now, we took into consideration the variables attached mostly to the shadow & light. If there are other variables like the buildings and cars and trees then each will have several other variables attached to it. This simulation represents itself to

another simulation which again responds to another simulation which again responds to another simulations which to another depending upon the previous one and its observations. So, simulations are increasing exponentially by responding to other simulations and this exponential increase in simulations is a fact that the "Nature tries to adjust itself constantly from creating any errors that might light an alarm to the observer that, this is a simulation, not a reality"[4]

So, reality is a simulation of exponential wavefunctions and we live in a programmed world where the nature as a supercomputer programs our identity into precise detailing so that our mind doesn't arouse any suspicion.

We live in an augmented reality of simulation. And this simulation can only be observed when there is an observer. Else it doesn't make any sense. That's the Anthropic Principle. Universe tends to exist as humans are there to observe every details of it.

"Combining the timelike timelines with the exponential term, we get the exponential wavefunctions of 4Dimensions"....

To support the above bold statements, we will make an analysis based on the most famous unsolved millennium prize problems "P vs. NP" Conjecture. As we are a simulation, so we have no problem in considering "nature' a vast super-powerful computer with a high processing power beyond the limit of the human imagination and present super computers that we have now.

We will consider "Why time is exponential rather than polynomial?"

Let's consider a single person 'A' and 5 variables of nature related with him, → Light, Shadow, Gravity, Trees, Projective Plane. Lets denote the inputs as "S", such that S = 5. To select the best simulations among the 5 variables, nature will make a loop around the 5 variables first and then it will make 5 individual loops surrounding the parent loops. Such that 5 Parent loops with 5 individual separated loops. (If considered then around each of the individual loops, another 5 loops can be made, but we won't go into such complexity here).
As a result, we have "S" loops (Parent) times "S" loops (individual)… To make S*S or S^2, we will denote 2 as "K" such that it becomes S^K where "S" is the number of input variables while "K" is the number of lopping occurred. (K can be greater than 2 depending on complexity). This is the example of a ***Polynomial Growth***.

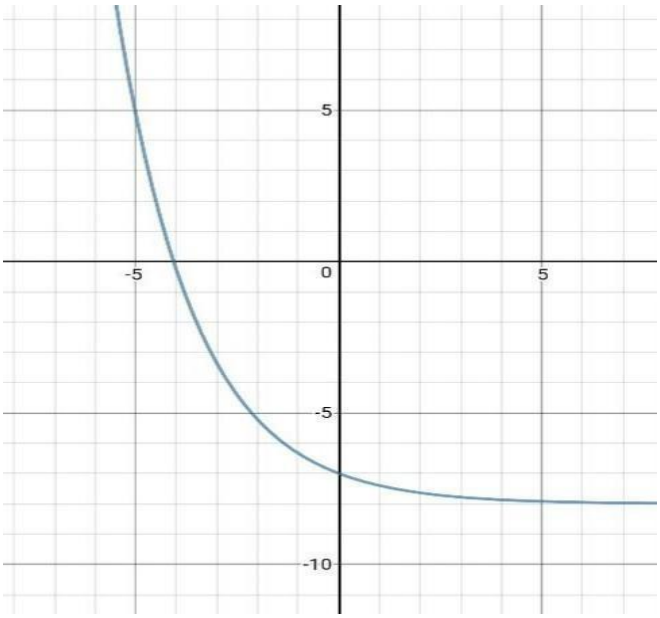
Now, let's consider 5 persons, A, B, C, D, E instead of only A. Therefore each person has 5 Variables of simulation that we need to consider as before. However, in the previous case, (where 5 parent loops has 5

individual loops and if each individual loops has 5 more loops related to that, then the looping would increase polynomialy as S*S*S or S^3 or S^K), this time the input variable is 5 as before but, the input remaining the same, with each increase in persons like adding more persons F,G and so on…… the looping will increase exponentially and it will be the number of persons raised to the number of inputs, such that, for 7 persons (A,B,C,D,E,F,G)… the growth occurs $Persons^{Input}$ or 7^5 or K^S . Here the increase is much more sharp and exponential and this is the nondeterministic exponential growth that we need to consider in real life simulations when related with nature to give us ***Exponential Growth***, paving the way for exponential wavefunctions while deducting from the timelike Minkowski line element.

Here now, we will assume some abstract mathematics, like as we know, the first derivative of distance with regard to time is velocity, the second derivative becomes acceleration, the third being jerk, we will try to represent the Present as the position vector, the Past as the first derivative, the Future as the second derivative, and from that we will derive the third derivative S"' which is indeed very special to our viewpoint as we will see the further analysis below.

Considering the Exponential equation, $\mathbf{y = .6^x - 8}$, we assumed that the variables of simulation are 0.6 (that is being counted from 0.1, 0.2, 0.3, 0.4, 0.5, 0.6) and the exponential as 'x' as any number of persons required (maybe in decimals, may not be in decimals), of course 0.6 cannot be the maximum amount but for the clarity of explanation below, and in drawing the

graph, we take the value as 0.6. After that we deducted '-8' from the equation, this has no relation with our physical world, this is done to make the graph plotting looking nice and helpful in computation of the further mathematics. Let's see the graph…

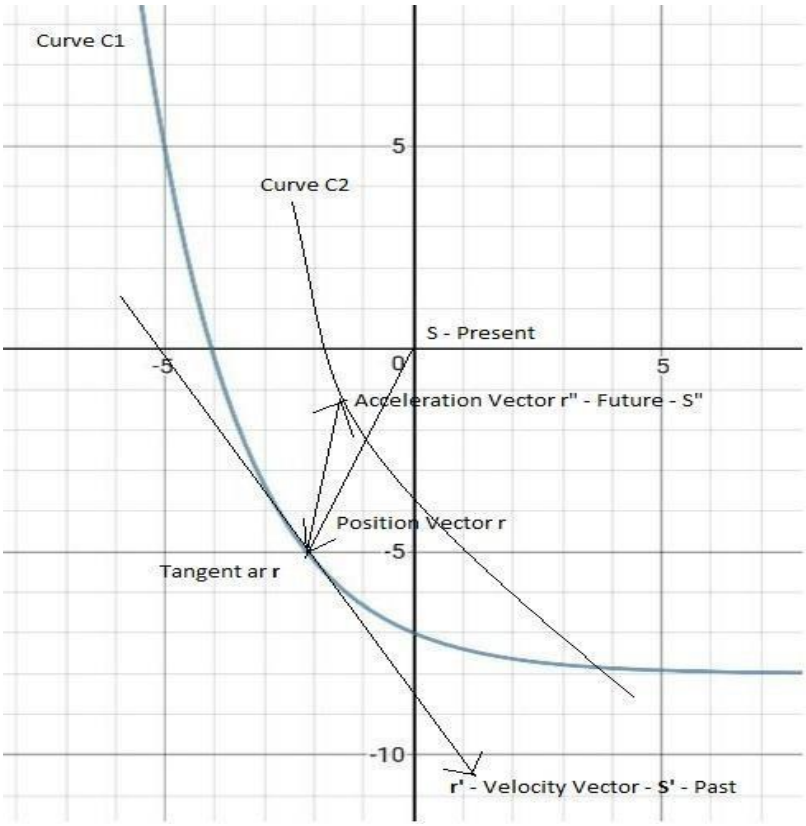


[5]

METHODOLOGY

Let's begin the mathematical analysis by considering two important differentials which would lead to a third differential, that is of immense interest to our paper, mostly in the Mandela Effect and merging timelines.

Consider this image below…



Here there are two curves, curve C_1 and curve C_2. Curve C_1 has more intrinsic curvature than curve C_2 (although neither the more, nor the less curvature matters). All has been plotted in 2D XY – Coordinate Frames. The point of Origin is S. From this point a Vector **r** approaches and intersects the curve C_1. Therefore, there exists a tangent vector or Velocity Passing through the point of intersection of **r** & C_1 as the first differential of **r** with respect of time as **r'**. Now, if we look closely into the diagram, there is an acceleration vector **a** that originates from the point of intersection of **r** & C_1 which goes in the direction of the origin of vector **r** from S. This acceleration vector is the second differential of time with **r** as **r''**.

Now it's time to make the conclusions from it…

The S is the Present or the origin of events.
The **r'** which is the velocity is actually the Past that has been moving away tangentially from Present & Future. The **r"** which is the acceleration vector is the Future S'' going in the same direction as Present S (The Origin) which means Future is coming towards the Present and in general it does so!) and the origin of this acceleration vector marks the intrinsic curvature on C_1 as a somewhat hyperbolae as curvature induces more acceleration.

So, we have got 3 – Parameters to identify events as Past (S'), Present (S) & Future (S").

If Space is defined by "S" & Time is defined by "T", then there exists a Proper time "t".

If you consider space as a function of Time then, S = f(T)

If $\mathbb{N}$ is defined as the Events taking Place in Future and - $\mathbb{N}$ in Past, Then, there exists the following relations…

$\mathbb{N} : S \Rightarrow S"$

&

$-\mathbb{N} : S \Rightarrow S'$

Such that,

$\forall\ t \in \{\mathbb{N}, -\mathbb{N}\}\ \exists\ (T \subseteq \mathbb{N}), (T \subseteq -\mathbb{N})$

Now we can define a bivector as a wedge product of S' & S'',

Such that,

$\forall\ \mathbb{N} \cap -\mathbb{N}$, there exists the Bivector $(S'(t) \wedge$

S"(t))……EQ(1)

The bivector $(S'(t) \wedge S''(t))$ is interesting as it denotes that Moment of Proper Time "t" as the function of Past(S') & Future(S") where repetition of events occurs. These repeating events can be expressed as Déjà Vu or Mandela Effect.

Here if we take the Partial derivative of the bivector and differentiate it as a multiple of Present 'S', we get…

$\partial/\partial t$ of $\{S(t) \times (S'(t) \wedge S''(t)\}$

$\Rightarrow (S(t)*S'(t) \wedge S(t)*S''(t))$

$\Rightarrow S(t)*S''(t) + S'(t)*S'(t) \wedge S'(t)*S''(t) + S(t)*S'''(t)$

Then there exists 4 combinations.....

Present * Future
Past * Past
Past * Future
Present * (An unknown element)

This unknown element is the third derivative of "$\partial/\partial t$" which is S'''.

And this $S''' \sim (S'(t) \wedge S''(t))$ *[EQ(1) in page 7]* {Here it has been hypothesized that this S''' is the wedge of S'(t) & S''(t), in which we can consider Past as the current present which in times becomes the Past}

Now consider the following element of Spatial intersections $\forall\ t \in \{\mathbb{N}, -\mathbb{N}\}\ \exists\ (T \subseteq \mathbb{N}), (T \subseteq -\mathbb{N})$,

Such that…

Present * Future (Proposition A)
Past * Past (Proposition B)
Past * Future (Proposition C)

Present * 《(An unknown element)⇒S"'》

Proposition A is true... We can relate Present with Future.

Proposition B is true... We can relate one Past events with another Past Events.

Proposition C is true... We can relate Past events to Future events if there is a Casual link between them.

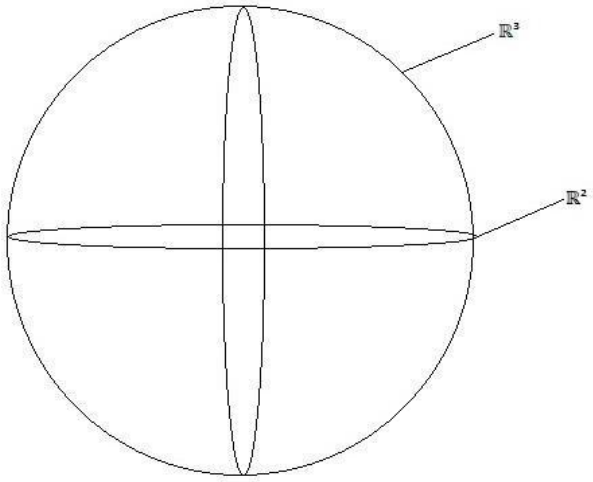
Proposition D is missing which is (Future * Future) and we can't link two future events in time. It's absurd. I mean to say that we can't link anything that has not happened with anything that has not happened.

The last is {Present * 《(An unknown element)⇒S"'》} Which is relating Present with a complete mixture of Past and future as a bivector which is S"'.

(This causes the Mandela effect or Déjà Vu in which Present has been intersected by Past & Future which means Time stream is leaking either in either Past or in Future)

Here we have seen that Time stream is leaking in Past and Future but below we will analysis the Leaking of Time stream in other dimensions or other worlds via the 2D Time Theory.

We will now see a further analysis below…



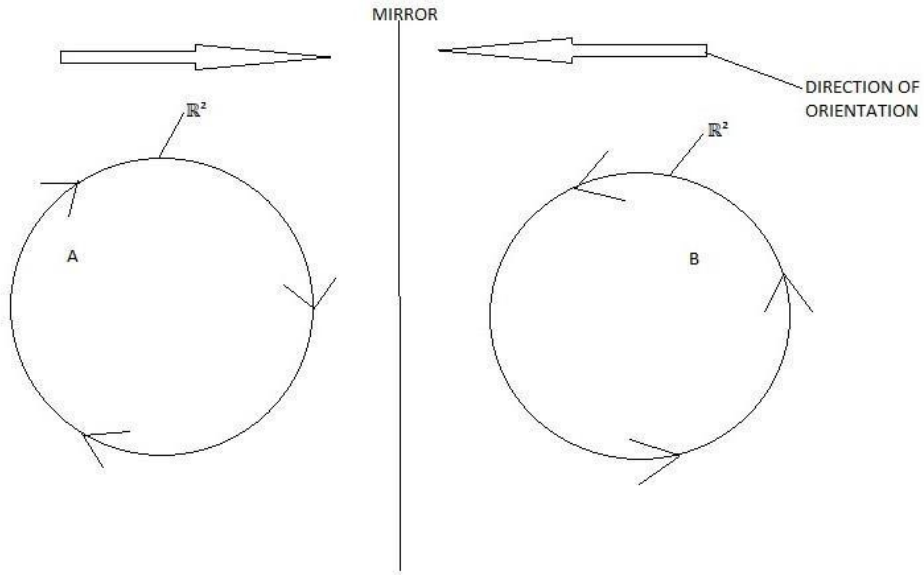
From this picture, Let us consider a $\mathbb{R}^3$ manifold that it is equal to a 3D Sphere or S^2.

A sphere has a uniform curvature always and is usually the composition of many circles of different size. Let us consider all the circles that are passing through the centre of the circle such that all the circles have shared a common centre as the centre of the sphere. Therefore there exist 3 critical points on each circle such as P, P_0 and $P \wedge P_0$. Where, P is the tangent vector, P_0 is the center while $P \wedge P_0$ is the Wedge Product of the two.

Now there exist all the circles which have 2 Dimensions that is a $\mathbb{R}^2$ Plane along a $\mathbb{R}^3$ manifold (Sphere).

Now our world seems like a 5 Dimensional world as $\mathbb{R}^5$ such that $\mathbb{R}^3$, $\mathbb{R}^2$ are there. But in essence any $\mathbb{R}^3$ sphere has a embedded $\mathbb{R}^2$ circle passing through its centre. So, the critical dimension will be the same as $\mathbb{R}^3$.

Now consider the below picture of mirror Symmetry.



Now concentrate on 1 circle $\mathbb{R}^2$ of a $\mathbb{R}^3$ sphere with an Orientation O+. (Clockwise)

There exists a mirror symmetry such that there exists another 1 circle (reflection) $\mathbb{R}^2$ on a (reflected) $\mathbb{R}^3$ Sphere with orientation O-. (Counter-Clockwise)

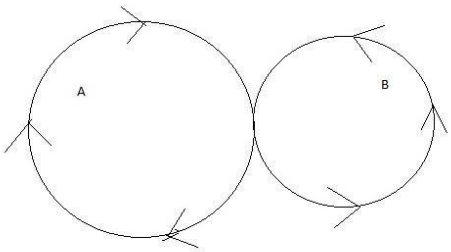
Let O+ be a Set A. Let
O- be a Set B.

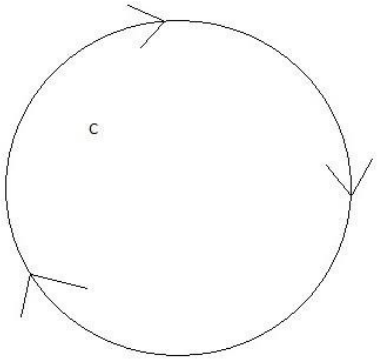
Set A = $2\pi\oint({}^{b}_{a})$ r dr where "a" coincides with "b".
Set B = $2\pi\oint({}^{d}c)$ r' dr' where "c" coincides with "d".
{Coincides of two points occurs as they will meet each other in a circular loop)

Now due to opposite orientation if 2 spheres comes in contact with each other, then the 2 circles sharing their respective centre points with the sphere also comes in contact and merges with each other (due to opposite orientation).

See the below images…

STEP 1





STEP 2

Therefore, there exists a final circle $\mathbb{R}^2$ of Set C.

The mathematics of merging is given by....

$A : a \Rightarrow b , \forall ab \in A$

$B : c \Rightarrow d , \forall cd \in B$

$C = 2\pi\oint_a^d r'' \, dr''$

Or,

This happens as.....

$C : A \Rightarrow B , \forall(a\text{-->}d),(b\text{-->}c) \exists c,d \in C$ where "a" coincides with "d".

Here this merging of Circles A & B when merged to C then two parallel world merges with each other.

Note……. r, r', r'' are the radius of different circles. Each sphere has a circle of each unique radius.

Thi A & B & C are he 2-Time Dimen ion exi in a $\mathbb{R}^3$ Sphere.

(This example shows the leakage of reality in another world)

This alternate merging can be represented by a simple proof that for every Positive integer, there exists a negative integer.

Here, if you notice, then you will find that all positive integer counted to the infinity has a (-) version of them which is same as opposite orientation of one Circle with the other.

That means in 3 Space Dimensions, there exists an embedded 2 Time Dimensions such that if all the infinite circles (1 from each sphere) are floating in a Multiverse of Infinite Spheres, only 2 circles (each from 1 Sphere) will meet with each other that are of opposite orientation or opposite Vibrations as per string theory.

And this oriented Complete Set "C" when forms then, we can have a Mandela Effect.

Each $\mathbb{R}^2$ circles are 2-Time dimensions embedded in a $\mathbb{R}^3$ Sphere of 3-Space dimensions.

The attachment of C : A ⇒ B , ∀(a-->d),(b-->c) ∃c,d ∈ C where "a" coincides with "d" proves that ***PARALLEL WORLDS OF OPPOSITE VIBRATIONS INTERSECTS*** with each other forming a closed loop if and only if we consider Time as 2-Dimensions.

Now, after considering the leakage of time in Past and Future, along with Parallel Worlds, Let us end this concept by talking the fact that we have pointed in the beginning of the paper. That is ***WHAT IF OUR WORLD IS A SIMULATION? & MANDELA EFFECT ARE ITS GLITCHES OR LITTLE BUGS.***

We can say that what we observed becomes the part of our physical reality. And our observations when cease to exist, our brain turns on an *AUTOPILOT MODE* which is to save the memory power. What if? Nature also tries to save its data or processing power by observing certain things once in a wrong way & then continuously reflecting on that image without considering the need for further observation. What if? Nature is a giant supercomputer with a processing power far beyond the reach of individuals. Enormous power that depicts the observable physical reality.

First let me give you an example of *AUTOPILOT MODE* of Brain. Suppose, you are going on a car in an infinitely long straight road where there are no twists, turns & not even other vehicles. Your brain will notice this for sometime & then makes an image in front of our eye as if the same thing repeats forever. So, we are lost in a false vision that has been depicted initially but if later on any vehicles suddenly come in front of your car, you will eventually fail to notice that and an accident occurs.

Nature also did the same thing to us. It recognizes the initial pattern & embedded this in reality without the need of any further observation and we can't realize the mistake as if we observe multiple times then at one point of time we will eventually correct our mistakes.

Now, coming to the point… If nature really is a giant supercomputer and everything we see are just the simulations then the small margin of errors that we noticed are the Glitches in the Natures Supercomputers. And these glitches tend to show us that we are living in a simulated structure.

If Nature really builds a simulation then, surrounding that simulation there needs to be evidence that the object has been correctly simulated like the shadow of the object, the reflection of the object, the things related to this object. And so to make the related things, Nature produces another Simulation. And then to reproduce the further related things, nature produces another simulation [4]. These simulations will eventually increase exponentially and merged with our own wavefunction of the Time Stream that is ***TIMELIKE***.

Considering our wavefunction as the "Timelike Interval" with an added exponential 'e' term, we can conclude the following mathematics.

Here for general convention, we will use time as 1-Dimension.

Consider the value of "e" ~ 2.718…….. (We will use this along with the Timelike Interval)

Consider our timelike curve as our Wavefunction $\Xi(\sigma)$ where σ = 3 Space + 1 Time Dimensions.

This implies.....

$\Xi(\sigma) = |ds^2 - e| = |- c^2dt^2 + dx^2 + dy^2 + dz^2 - e|$ … *Equation (*)*

Taking all the dimensions & speed of light as unitary we find the difference as 2.718..... - (-1+1+1+1) = .718.....

This is the small glitch that builds up when exponentially repetition occurs and when it approaches e^{∞} then the Wavefunction $\Xi(\sigma)$ blows upto infinity and collapse. That is why small perturbations works as false memories and confabulation of Physical world but infinite exponential collapses them.

If we take $e^{-\infty}$ then the Wavefunction $\Xi(\sigma)$ is same as 2 like before when there is no "e" in **Equation (*)**

Reality merges in unitary perturbations.
Reality collapses in infinity.
Reality is same thing if it happened at a very long ago beyond ones creation.

As Reality collapses in infinity, We can't observe or penetrate the simulated Collections of the creator. It becomes difficult to reach to the creator as time goes by.

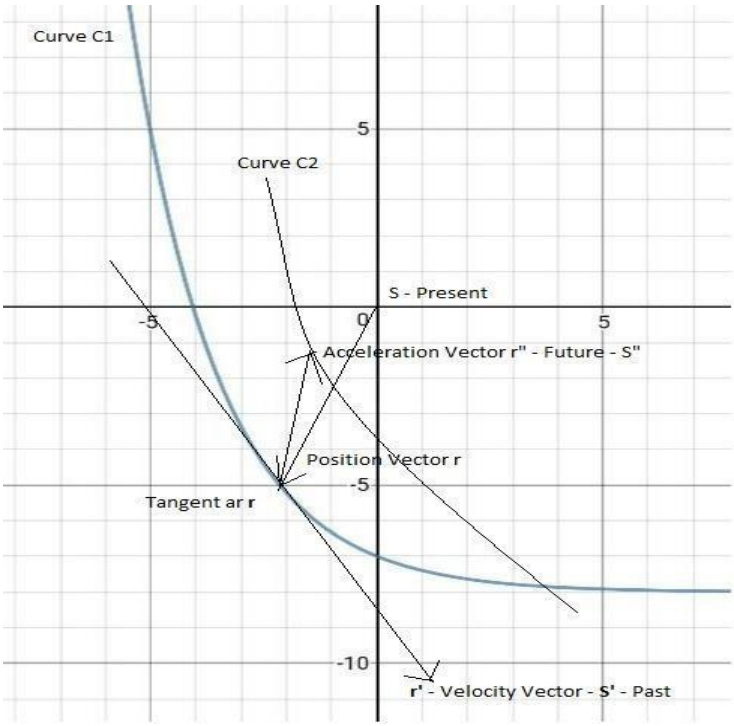
EQUATION ::

$$\Xi(\sigma) = |ds^{2} - \prod_{m=1}^{\infty} e^{m}|$$

Where || Symbol denotes the absolute.

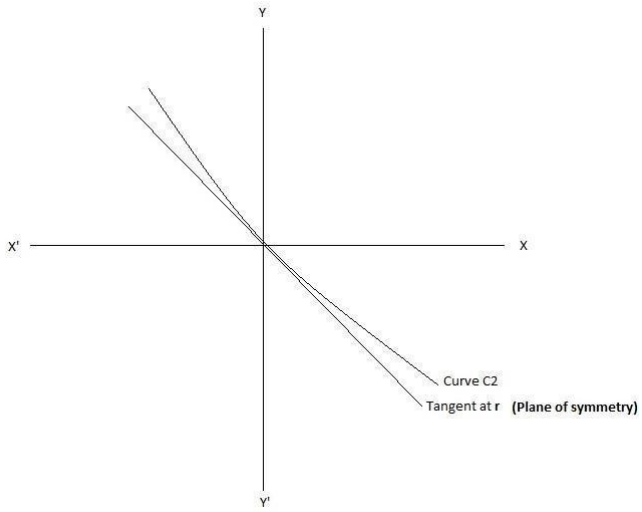
An In-depth Analysis of the Timelike curves and Loops…

Let's return to a more analytic and also generalized structures of this 'exponential wavefunctions'. For this lets consider the old diagram again.



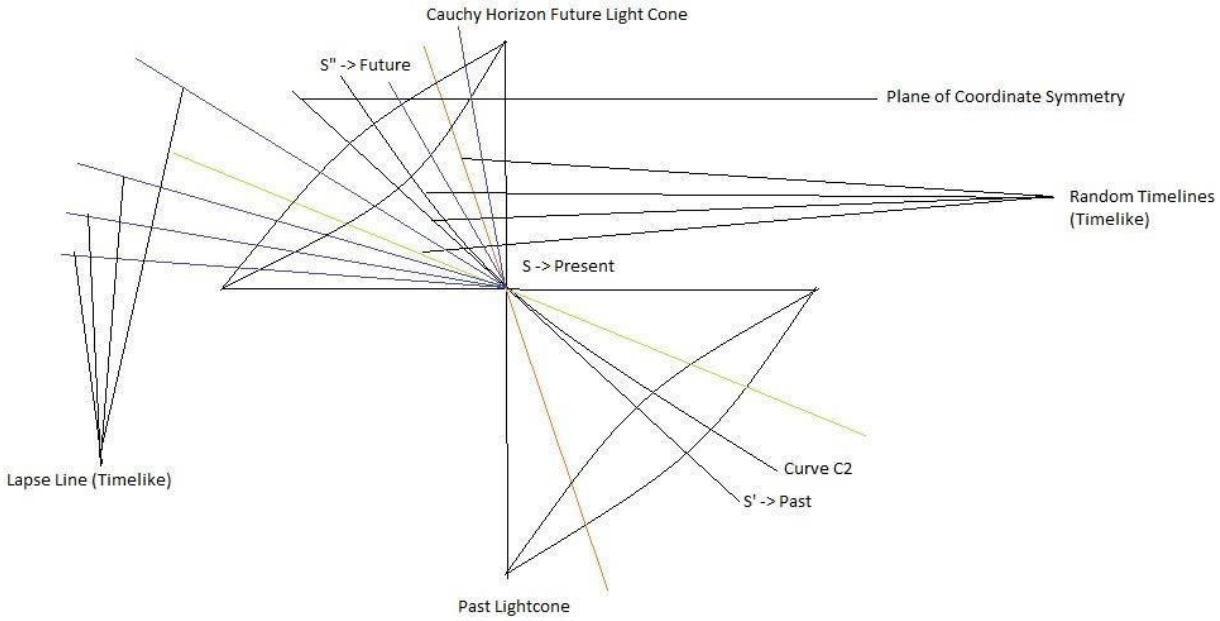
Here we will perform a mathematical operation called translation.

Consider the translated image below…



The Curve ***C2 & the Tangent at r*** has been translated to intersect at the origin of the coordinate X & Y. Here *C2 is the Future, Tangent at r is the Past & the origin is the present* as we have seen before at the beginning of the paper. Now, If we consider *Tangent at r* as the Plane of symmetry then for the XY-quadrant, we get a mirror symmetric X'Y'-quadrant. Here, a beautiful thing happens which we will discuss.

From the XY & X'Y' Quadrant, we can create a Minkowski Spacetime. Consider the diagram below…

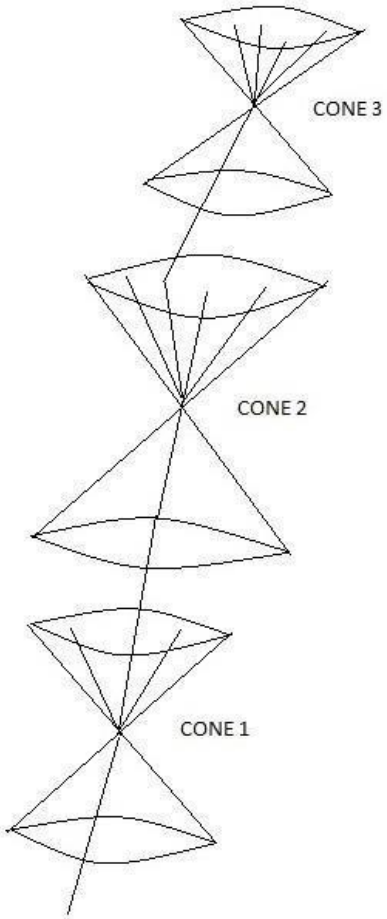


Here it doesn't matter whether Tangent at r or curve C2 is a straight or a curved line or the line of past and future, what matters is that both of them are worldlines which are timelike and they are from Past to Future light cone.

NOTE : The line Tangent at r, is not necessary to be a straight line but the point at which the position vector r intersects the hyperbola, the past needs to be of uniform velocity, so that at this small distance only the curve is tangent, but that doesn't mean the whole timeline needs to be straight, only the small part or the small part of the line (Tangent at r) needs to be straight.

Now, from this picture, it is seen that for a few past timelines, there are many future timelines. This means that our past is a nondeterministic algorithm which predicts the future. As world is a simulation, and nondeterministic means, for every input, there are several outputs, and this exactly happens with our future. For "N" past timelines, there are "N+1+1+1+1+1……." Future timelines. But, for each past timelines, there should be only 1 future timelines and how will the past timelines consider which future timeline to predict and join. This is shown by the exponential wavefunctions and in general, the wavefunctions with the lowest margin of error of future timelines will get selected and attached to, with the past timelines. However, this is not the case as it seems everytime, the nondeterministic timelines will tend to make the past timelines to get split into more than one future timelines which ultimately leads to paradoxes and looping of time (we will consider this concept soon after this).

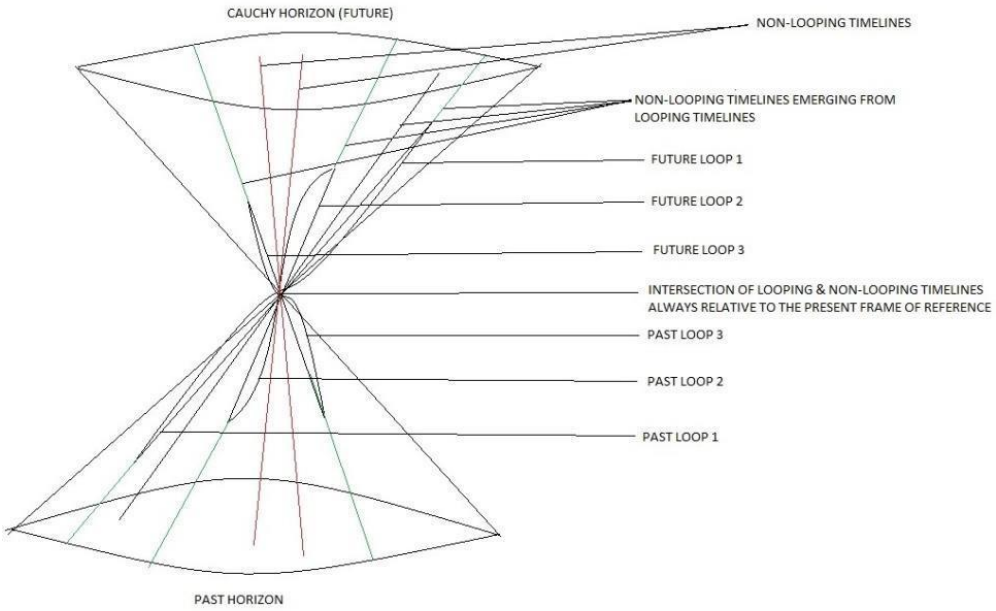
Here one thing needs to be specially noted that for a single past timeline, there will be different future timelines, but if this process repeats then there will be infinite timelines for an event. So, to prevent this, let's consider this picture…



There is one past timelines in CONE 1, which produces, 3 future timelines, however, in CONE 1, only 1 future timelines passes through CONE 2, where it has 4 future timelines, only one of them goes to CONE 3 which again produces 4 future timelines in CONE 3. So, there can be multiple timelines related to a single timeline, but only one of them gets through the other cone, while rest timelines simply vanished.

Consider a Past wavefunction $\Xi(\sigma) = |e^1 - ds^2|$, here the margin of error is small as Exponential has a power of only 1. However if Exponential has a Power of 2 or 3 or 4…… like $\Xi(\sigma) = |e^1 - ds^2|$ or e^2 or e^3 …… Then its obvious that the Past timeline with the wavefunction containing e^1 will choose the future timeline with wavefunction e^1…. But if it deviates from this then time will form a Closed loop (that is, the timeline bifurcates) and will unite to one soon after.

Consider the below image….

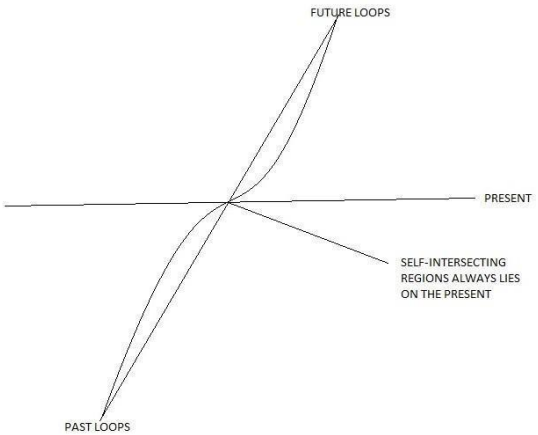


Here we can see that there are loops in the timelines. This bifurcation and looping occurs when the wavefunction $\Xi(\sigma)$ deviates to two more wavefunctions $\delta^1 \Xi(\sigma)$ & $\delta^2 \Xi(\sigma)$.

The complete function will be like this…

$$\delta\Xi(\sigma) = |\delta ds^2 - \prod_{m=1}^{\infty} \delta_{e^m}|$$

Here, a Single timeline bifurcates into two timelines which intersects the present and then again divides into two timelines, which ultimately joins into as single timeline in future. This ***looping of timelines*** can be best visualized in the below diagram…



This situation can be best described as “Imagine you wake up in the morning and went to the roof to feed the pigeons but suddenly being slightly unconscious you fell down from the roof of the house. But before you fell, you watched that there

are 3 pigeons chattering on the top of water tank. Now, as soon as you fell from the roof and hit the ground, you suddenly woke up as if it's a dream. You then went to the roof to feed the pigeons but mistakenly fell down from the roof. Again, you realize that it's a dream and you woke up. As per your regular duty, you went to the roof and feed the pigeons and fell down, and again woke up realizing it's a dream….. This continues. Ultimately you realize that, you will wait and watch yourself doing the same things over and over again, so, you wake up and instead of going to feed the pigeons you start hiding behind the water tank…. You will see that your same copy is feeding the pigeons and feel down from the roof. Then another copy of you will watch you standing behind the water tank watching you feeding the pigeons. Then another copy of you will watch you, watching you watching yourself feeding the pigeons….. You have entered in the loop of time which constantly bifurcates in the future and past with the common centre at the origin or present….."

This can be expressed as breaking a single wavefunctions $\Xi(\sigma)$ into multiple smaller wavefunctions like $\delta^1\ \Xi(\sigma)$, $\delta^2\ \Xi(\sigma)$ and so on…….

This is a Sci-Fi Concept which has been described by different movies over different situations as examples. What I have tried is to give a more logical & mathematical concept to the examples.

<u>Self Inflicting timelines and death loops…</u>

As nature uses nondeterministic algorithm to transfer from one phase to another that is from present to future the input timelines in the present has one wavefunctions $\Xi(\sigma) = |ds^2 - e^1|$, that is, "e" to the power 1 which has the least degrees of errors and when proceeded to the future, it has numerous wavefunctions to choose from, like $\Xi(\sigma) = |ds^2 - e^1|$ or $\Xi(\sigma) = |ds^2 - e^2|$or $\Xi(\sigma) = |ds^2 - e^3|$ and so on…. with the increasing power of the "e". But in most general cases, nature would chose the function identical to the present or so called past when compared with the future, that is $\Xi(\sigma) = |ds^2 - e^1|$ as in general case the wavefunctions with "e" to the power 1 has least degree of errors when concluded among the various powers of "e" to the wavefunctions mentioned before.

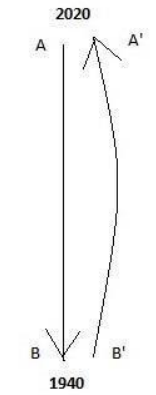
Now, in this section, we will see a very different thing such like splitting of wavefunctions into loops, like a single wavefunction $\Xi(\sigma)$ can split into 2 smaller wavefunctions like $\delta^1\ \Xi(\sigma)$, $\delta^2\ \Xi(\sigma)$ such that $\delta^1\ \Xi(\sigma) + \delta^2\ \Xi(\sigma) = \Xi(\sigma)$…. Which tells us that, after the splitting, the loops which are crated are the smaller parts of the parent wavefunctions and the loops when joined together again in some future time becomes the parent wavefunction same as before, that is $\Xi(\sigma)$.

However, in case of self inflicting timelines (or wavefunctions) which creates the death loops, a single wavefunction $\Xi(\sigma)$ can split into various loops like [$\delta^1\ \Xi(\sigma)$, $\delta^2\ \Xi(\sigma)$] or [$\delta^{11}\ \Xi(\sigma)$, $\delta^{22}\ \Xi(\sigma)$] or [$\delta^{111}\ \Xi(\sigma)$, $\delta^{222}\ \Xi(\sigma)$]……. such that $\delta^1\ \Xi(\sigma) + \delta^2\ \Xi(\sigma) = \Xi(\sigma)$, $\delta^{11}\ \Xi(\sigma) + \delta^{22}\ \Xi(\sigma) = \Xi(\sigma)$, $\delta^{111}\ \Xi(\sigma) + \delta^{222}\ \Xi(\sigma) = \Xi(\sigma)$.

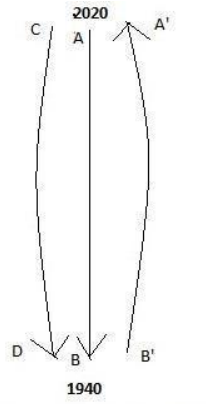
Here $\Xi(\sigma)$ is the parent wavefunction and the constants δ^1 , δ^2 or δ^{11} , δ^{22} or δ^{111} , δ^{222} represent different loops of the same wavefunction $\Xi(\sigma)$.

Here we will make one important assumptions, the wavefunctions contains the exponential term "e^{∞}" when one proceeds forward in time and the exponential term "$e^{-\infty}$" when we proceed backwards in time. Why this ambiguity, we will discuss below.

Consider the below image…



Scenario (a)



Scenerio (b)

We will try to interpret the grandfather paradox using this “exponential wavefunction”.

Suppose, the person (or the child of the daughter of grandfather) present in 2020. He goes back to 1940, to kill his grandfather before the grandfather gave birth to the mother of the child as seen in Scenario (a).

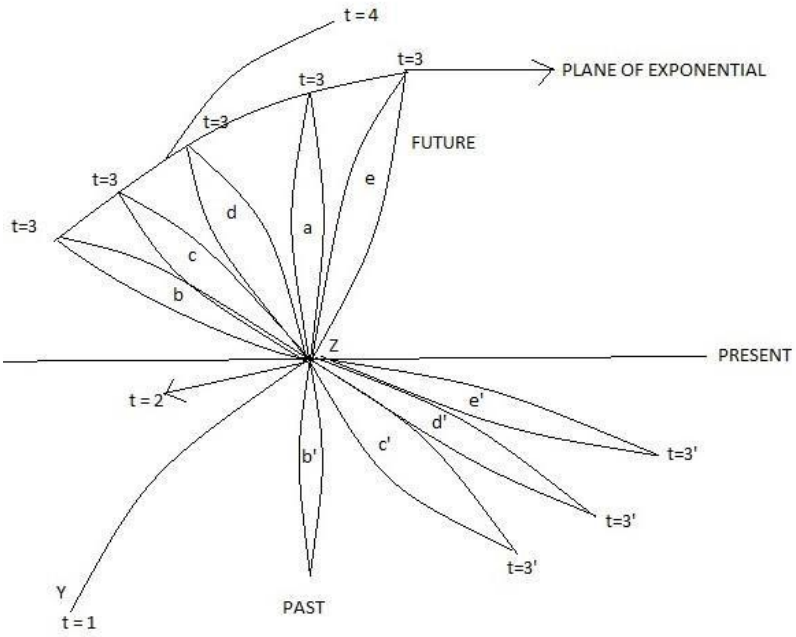
Now is it at all possible for the child to go back in 2020? , as his timelines then becomes nonexistent. It simply ceases to exist as he is not born. Then how should he returns to 2020 from 1940…. He can’t as because as soon as he killed his grandfather, the specific wavefunctions of “e” to the power 1 term blows up along with the least degree of errors and all the other wavefinctions with “e” term 2,3,4,5,6,7,8,9…… will accumulate to an infinite possibilities but here nature ceases to find the least possibilities among them as “e” to the power 1 is already destroyed and the wavefunction gets collapsed. Let’s see how?

Here the wavefunction stands out to be $\Xi(\sigma) = |ds^2 - e^{\infty}|$ which results in $\Xi(\sigma) = \infty$ and if we examine further then it is also not possible for him to go to the past to kill his grandfather. Why? Because if he goes to past then, Nature has to face an infinite amount of wavefunctions as nature has to choose among a variety of timelines or wavefunctions which will take him to the desired event in 1940, when he would kill his grandfather, therefore, the wavefunction will also accumulate exponentially but in this time there should be a “$-\infty$” term raised to the power of “e” like be $\Xi(\sigma) = |ds^2 - e^{-\infty}|$ which shows that the wavefunction is just simply a line element of timelike coordinates as "$e^{-\infty}$" is 0, so that, $\Xi(\sigma) = ds^2$. He is at the 2020 and always be at 2020.

Now, we will jump into a more rigorous explanation of the wavefunctions where “***DEATH LOOPS***” can be created.

Note: DEATH LOOP is a hypothetical concept which I have introduced here.

Consider the image below…



A Person say "Bob' goes to sleep at point "Y" at "t=1". He wake up from the sleep at Point "Z', "t=2" which is the Present. He has a perfect wavefunction at Point 't' and 'z', such that, $\Xi(\sigma) = |ds^2 - e^1|$. Now From point 'z', the wavefunction bifurcates into 2 loops $\delta^1\ \Xi(\sigma) = |\delta^1\ ds^2 - \delta^1\ e^1|$ and $\delta^2\ \Xi(\sigma) = |\delta^2\ ds^2 - \delta^2\ e^1|$and created the loop "a" such that $\delta^1\ \Xi(\sigma) + \delta^2\ \Xi(\sigma) = \Xi(\sigma)$. The loop would be created as the wavefunction $\Xi(\sigma)$ got divided by the exponential term "$e^{-\infty}$"…. The equation becomes,

$$\frac{}{e^{-\infty}} = \left|\frac{\Xi(\sigma)}{e^{-\infty}}\right| = \left|\frac{ds^2 - e^1}{0}\right| = \frac{2 - 2.718}{\infty} \ldots\ldots EQ(2)$$

Then Bob arrives at the vertex "t=3" and Nature will try to nullify the EQ(1), by multiplying the term "$e^{-\infty}$" on both the sides which has been divided by "$e^{-\infty}$" on both sides previously…. The Equation becomes,

$$e^{-\infty} * \frac{\Xi(\sigma)}{} e_{-\infty} = \infty * e^{-\infty} = 0 \ldots\ldots EQ(3)$$

Now, from "t=3", the timeline loops back to the present Point "z" and again followed by *EQ(2)* makes a loop "b" and reaches at the vertex "t=3", then followed by *EQ(3)* loops back to the present point "z".

"This situation can be best described by the previously encountered example, Bob goes back to sleep at "t=1" , wakes up "t=2" which is his present and ***Death Loop*** started following the *EQ(2)* , timeline reaches "t=3' where he feed the pigeons at the front of the water tank and *EQ(3)* takes place, he unconsciously fell down from the roof and again wakes up at Point "z" Present, enters into another Death Loop "b", *EQ(2) & EQ(3)* takes place like before and he returns to present point "z". Again he wakes up and death loop "c" started, now, Bob wants to see what he is doing previously, in that case he will see himself feeding the pigeons which is loop "b' " at "t=3' "… Here "b' " is a Past Loop that he already encounters and he then goes on to feed the pigeons but fell from the roof and get awake at point "z" which is Present and enters loop "d". He will watch himself watching himself watching behind the tank that he is feeding the pigeons in the Past loop "c' "…. (He is obviously watching his Past)…. And the situation repeats itself until and unless a certain condition is met, now, we will see the conditions…

Here a list of conditions needs to be fulfilled to escape from the *Death Loop*, here, if nature selects his wavefunctions with the exponential term "e^1 "… Then, both sides of the equation $\Xi(\sigma) = |ds^1 - e^1|$ needs to be divided by "e^1 "… Such that,

$$\frac{\Xi(\sigma)}{e^1} = \left|\frac{ds^2 - e^1}{e^1}\right| = \left|\frac{ds^2}{e^1} - \frac{e^1}{e^1}\right| = |2.718\ldots\ldots - 1| = 0.2641648271\ \ldots\ \ldots\ EQ(4)$$

This implies $e_1 = 0.2641648271$ in *EQ(4).*

Next Step is we will take the exponential term e^1 and perform a division like $\frac{e1}{0.2641648271}$ =

10.28903064……*EQ(5)*

So, 0.2641648271 *has to repeat 10 times to reach e^1 as per EQ(4)….Therefore minimal 10 loops are required if "e" has the power 1 to escape from the (PLANE OF EXPONENTIAL (see the above diagram)) to reach time "t=4". Now, we will see the gap which is very important here…. The gap must be on the order of equal to or greater than e^1 or (*10.28903064 - *2.718) that is 7.57103064 EQ(**) in order to get through the portal or time tunnel to start looping. And maximum 10 loops can be done approx as seen from EQ(5)*

Now we will perform the operation with the exponential wavefunction e^2 such that….

Next Step is we will take the exponential term e^2 and perform a division like $\frac{e2}{0.7292732991}$ =

10.12998009……*EQ(7)*

*So,*0.7292732991 *has to repeat 10 times to reach e^2 as per EQ(6) and EQ(7)….Therefore minimal 10 loops are required if "e" has the power 2 to escape from the (PLANE OF EXPONENTIAL) to reach time "t=4". Now, we will see the gap which is very important here…. The gap must be on the order of equal to or greater than e^2 or (*10.12998009 - *2.718) that is 7.41198009 EQ(**) in order to get through the portal or time tunnel to start looping. And maximum 10 loops can be done approx as seen from EQ(5) and EQ(7).*

A coincidence is that Approx EQ(5) = Approx EQ(7
).
Now what will happen if we take e^3 as the exponential term…

$$\frac{e^2}{e} = |e^2 - e^2| = |7.387524 - 1| = 0.7292732991\ \ldots\ \ldots\ EQ(6)$$

$$\frac{\Xi(\sigma)}{e^2} = \left| \frac{ds^2 - e^3}{e^3} \right| = \left| \frac{ds^2}{e^3} - \frac{e^3}{e^3} \right| = \left| \frac{2}{20.07929023} - 1 \right| = 0.9003948856 \ldots \ldots EQ(8)$$

Now, here from e^3 onwards we will see that $\frac{e3}{} = 22.30053788$. The gap is less than $e^1(2.718\ldots)$ 0.9003948856 that is 22.30053788 - 20.07929023 = 2.221247651 … … $EQ(5)$ *and* $EQ(7)$. Here the "Exponential Gap" is not sufficient to pass through the portal and hence no looping occurs.

If we take e^4 then the answer comes to 2.076081049 which is also less than 2.781……

…….
…….

If we take e^{10} the answer comes to 2.000181805 which is also less than 2.781……

…….
…….

If we take e^{20} the answer comes to 1.999999 which is also less than 2.781…….

If we take the value as e^{24}, then the solution is

$$\frac{\Xi(\sigma)}{e^{24}} = \left| \frac{ds^2 - e^{24}}{e^{24}} \right| = \left| \frac{ds^2}{e^{24}} - \frac{e^{24}}{e^{24}} \right| = \left| \frac{2}{2.642328795 * 10^{10}} - 1 \right| = 0.9999999999 \ldots \ldots EQ(9)$$

$$\frac{e^{24}}{9999999999} = 2.642328795 * 10^{10}$$ *Now, …. Here the "Gap' is 2.718 (e^1) -* $2.642328795 * 10^{10} = 0.$

$2.642328795 * 10^{10}$ … … $EQ(10)$ *which is less than e^1, hence no looping occurs.*

From e^{25} onwards, the function returns the value itself when divided by e^{25} as we can see below that, $\Xi(e^{25}\sigma) = 1$

$$\frac{\Xi(\sigma)}{e^{25}} = \left| \frac{ds^2 - e^{25}}{e^{25}} \right| = \left| \frac{ds^2}{e^{25}} - \frac{e^{25}}{e^{25}} \right| = \left| \frac{2}{7.181849664 * 10^{10}} - 1 \right| = 1 \ldots \ldots EQ(11)$$

Now, $e^{25} = e^{25}$*…. Here the "Gap' is (e^{25}) which returns the value of the function itself. Hence from e^{25} and onwards, it is not accountable to take into the equation of looping.*

$\Xi(\sigma)$

From these calculations, we can conclude that the function ____e_y if and only if y = 1,2…. The function has a time loop of 10 times and its also greater than the minimal exponential gap e^1 as seen from EQ(**)(in page 20 and 21)…. After that upto y=24, the result is less than the minimal exponential gap. And from y=25 onwards, the equation repeats the value of the function itself.

So, e^1 & e^2 has the minimal exponential gap and close to the line element ds^2 (-1+1+1+1 = 2). These are the two loops through which time travel can be done with repetition of events like 10 as per EQ(5) and EQ(7). After that from e^3 to e^{24}…. Time travel can be done with no repetition of events as its close to ds^2 but less than the exponential gap e^1 which provides looping. And from e^{25} onwards, no time travel is possible as the function repeats the exponential itself.

PLANE OF EXPONENTIAL lies as a Superposition of all "t=3" which provides the way to "t=4". (see the previous diagram)

The loops bb', cc', dd' are depicted as δ^1 , δ^2 or δ^{11} , δ^{22} or δ^{111} , δ^{222} , a has no a' factor as it's the first and foremost loops.

NOTE: The value of 'e' is taken upto 3 decimal places that is 2.718….. and all calculations are done step by step in CASIO fx-82ES PLUS Calculator.

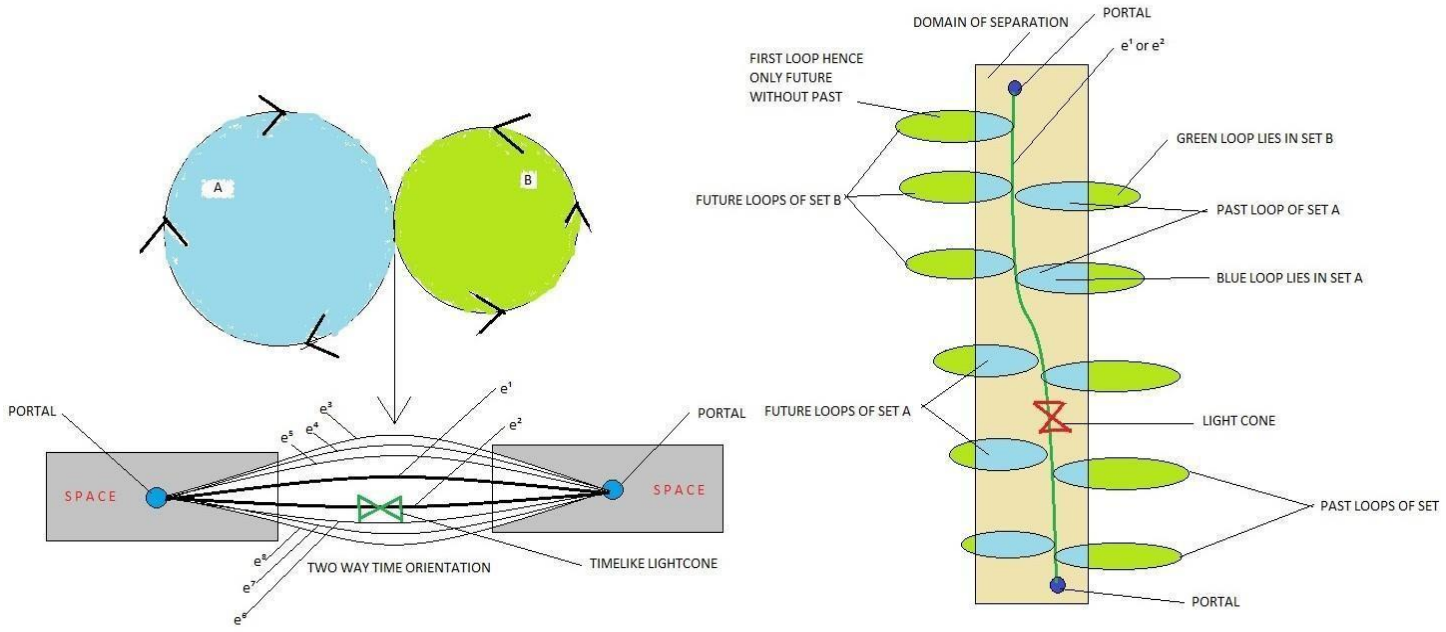
Result:

2 wavefunctions for repetition of events and time travel, e^1 and e^2.

22 wavefunctions for time travel with no repetition of events, from e^3 to e^{24}.

25^{th} wavefunctions and onways, the door for time travelling is closed that is from e^{25}…

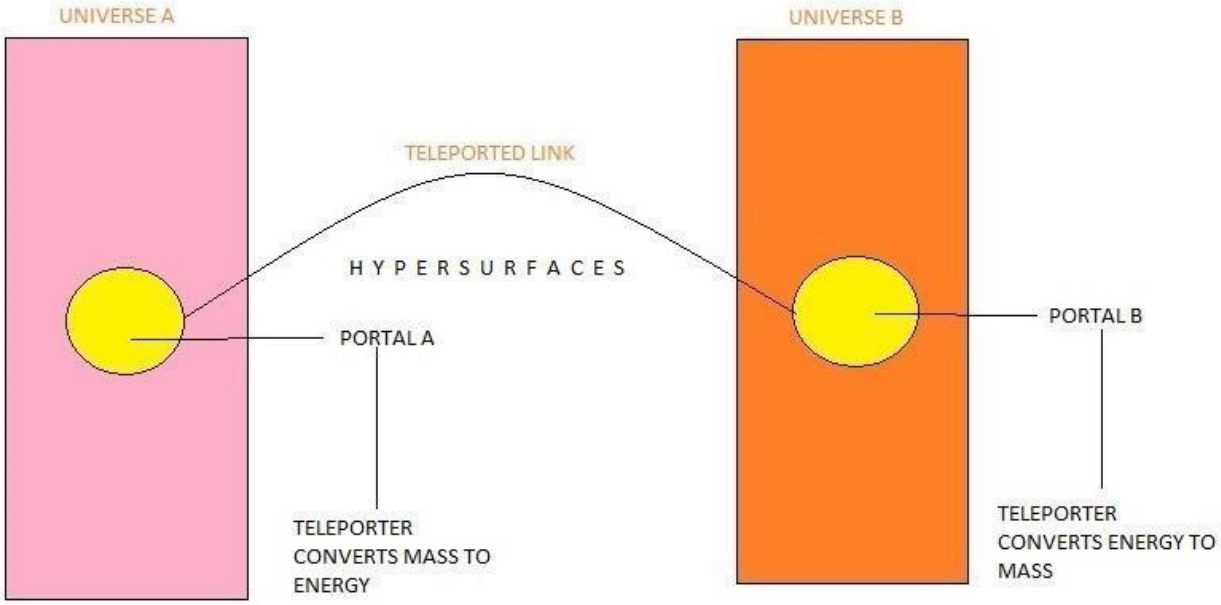
Starting this paper with the 'Mandela Effect' and then proceeding mathematically to prove about amalgamating timelines from parallel universes by using the 2-Dimensional Time as the main tool for factoring out all the oddity and obviously we have assumed the universe or the observable part of the universe to be a simply connected closed surface in topological terms, then from there, we explored the exponential functions (rather than polynomial functions) along with the various values of the wavefunctions with an upper limit and the importance of the limit and the wavefunctions derived as a difference of the line element in Minkowski Space, we feel the need to explore the loopings and cross loopings of times we have encountered in several sci-fi motion pictures around the world by using abstract mathematics, the time has come now to conclude with a very beautiful and simple fact (although the paper is not to hard at all), we have also discovered a beautiful thing from the 'exponential wavefunctions' that there are some timelines (or wavefunctions, anyway!) which have loopings in them while most others are free from loopings, and also, there exists an upper bound where no time travel has been possible to past or future as the wavefunction got 1 or repeats the value of the exponential itself. Now we will consider a final image that will describe everything in a single picture and will also shows us the concepts of ***Portals or Stargates or Gateway of Gods..***



*Here in this picture, Set A and Set B are 2-Time Dimensions or a 2D Circle which merges due to opposite orientations and obviously the Sets here represents the Parallel Worlds or Universes that are oppositely symmetric or mirror symmetric in nature, and the merging point of Set A and Set B shows a lot of Exponential Curves while the bold one are the first 2 bold Timelines (Timelike, in fact all are timelike but only one has been shown with a light cone in it, this model doesn't requires faster than light speed or light speed to travel in time which is the most advantageous and realistic according to me as it doesn't violate the relativity) of e^1 and e^2 curves and rest are also marked upto e^8 and the point where all the timeline converges represents a part of space which is the portal (deep blue circles) and furthersome, the e^1 or e^2 loops are magnified in the right hand side of the diagram where Green indicates Set B and Sky Blue indicates Set A, Portal is also shown there at the end of the 'timelike' timeline, here we have marked the loops of set A and set B which are marked by Green and Sky Blue colors, in accordance with our calculation above with the exponentials, the first loop is always in future with no past loops and after that there will be 10 repeating loops, which then vanishes and takes us to the next time, here from e^3 looping is not possible as per our mathematics and we are not showing it there in the right hand part of the image, we have mentioned a 'Grey Zone' called the "**Domain of Separation**" which is that portion of the universe where no such looping occurs, remember only the 'Grey Colored regions', not the timeline or loops that falls in it. This is the theoretical description of everything that has been pictorially represented above.*

TELEPORTATION

What if? There is no exponential wavefunctions between the parallel worlds, there is no merging of the 2Time Dimensions but still we want to move on to the alternate reality or parallel world or higher dimensions.
We have only one thing left and that is "*Teleportation*". There has been a Hypothetical device called the "Teleporter" which works in a 2-way machine. If there are two portals then the 'teleporter' at the first portal will convert mass to energy and the 'teleporter' and the second portal converts the energy back to mass and all this energy travels between the 'teleported link' which lies at the 'hypersurface'. Now here we will use the 'Polynomial Functions' rather than 'Exponential Functions' as because, in 'Polynomial functions'… If we look closely into the object being teleported then, there is the object that is a Human with 'P' – factors, which will loop 'P' times around then such that it's P*P or P^2…. Now, there is a limit of 'P' such that… 'P' must be equal to the segment that needs to be teleported. That means, the whole energy converted from mass has to
teleported but not as a whole, rather in discreet units. That energy has to be divided into 115 Parts as per the 'Polynomial Function', Here 115 is not such a special number which we will discuss below…



Here we will take the 'spacelike wavefunctions' denoted by $\xi(\sigma)$ where σ denotes the 4 Space-Time dimensions in Minkowski metric as $dl^2 = +c^2dt^2 - dx^2 - dy^2 - dz^2 = (+1-1-1-1) = -2$.

Therefore, the 'Polynomial Spacelike Wavefunction' is…

$\xi(\sigma) = |dl^2 + P^2|$
By proceeding further we will divide the wavefunction by P^2. This results in …

$$\frac{\xi(\sigma)}{P} \quad \frac{dl^2 + P^2}{} 2 = | \quad P2 \quad |$$

Therefore,

$$2 = | P2 + P2 | \quad \frac{\xi(\sigma)}{P} \quad \frac{dl^2}{} \quad \frac{P^2}{}$$

Putting the value of 'P' as 115, we get…

$$^2 = | 115^2 + 115^2 | \quad \frac{\xi(\sigma)}{P} \quad \frac{-2}{} \quad \frac{115^2}{}$$

This gives,

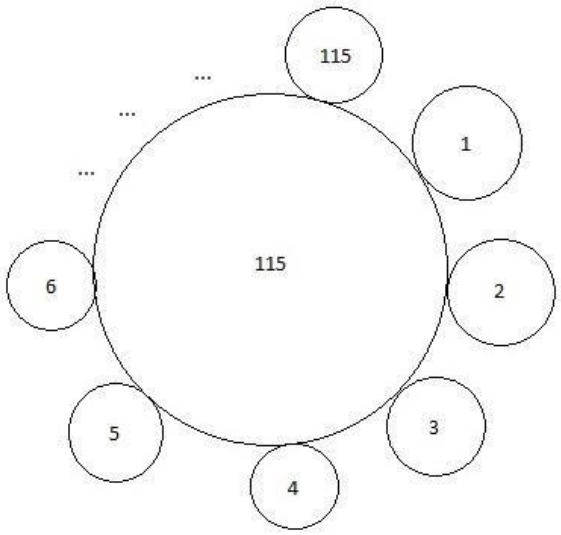
$\xi(\sigma)$
$\frac{}{}2 = 0.9998487713$ and dividing this by P^2 (115^2), we get 13227.003.

P

Next we have to compute the 'gap' that is P^2 (115^2) - 13227.003 = -2.000302503 which is rounded up to -2. Hence we obtained the dl^2.

Now, How do we map the 3D Particle from the domain of one universe to the range of the other universe?

If the Total mass of the 3D Particle is 'm_0' and to compute energy we will have to multiply it with c^2… That is m_0c^2… Let this energy be U. Now we have to divide U by 115 Parts such that U_1, U_2, U_3….. U_{115} = a loop of 115 parts such that, each part is looped or rounded up once in the form 115*115 or 115^2 or P^2.



The Polynomial 115^2 gives us the ideal function of the Polynomial in Teleportation. Now, the fragmented energy parts would arrive at the other side of the Portal in a random order. So, to prevent the formation of a random structure we need to identify each particle with a number of integers such that each integer will denote 3 Integers of a 3D Coordinate system.

Like we will take into account 115 Sets Such that,

{1, U_1}, {2, U_2}, {3, U_3}…….. {115, U_{115}}

By this technique we can assign each fragment of energy just like the before in a Structured order. As {x,y,z} ∈ 1,2,3. This can be done by the 'teleporter' at the other end while converting energy to masses.

I have concluded the energy packets as 115, but it can be done by any number of packets and the more the number, the more precise it's close to -2 while rounding off. The more the energy fragments or packets, the more perfect is the image that builds up in the parallel world with the less distortion as possible as the number of decimals after -2 goes infinitesimal and it becomes more approximately equal to dl^2. This point again proves ***the nature of simulated reality*** *as while teleporting, the person which appears at the other end of the destination 'teleporter', will show very less distortions as the source 'teleporter' splits the energy into much more fragments. The more the fragments of pockets, the less the distoration.*

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[5] Graph plotted in the website https://www.transum.org/Maths/Activity/Graph/Desmos.asp