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Research Article

The Gateway to Parallel Universe & Connected Physics

Deep Bhattacharjee[†*]

[†]*Project Lead of AATWRI-EGSPL, Bhubaneshwar, Orissa, India*
[*]*itsdeep@live.com*
[*]*https://orcid.org/0000-0003-0466-750X*

Abstract: The anisotropy in the CMBR detected by the COBE satellite has sprouted the research and theories of the void that got created, after being washed away by a parallel universe after its collision. This details of the roadmap to the parallel universe, that are previously been entangled, but now, separated, with the concept of 2-time dimensions as a time curve of R^3 containing the R^2 closed curves embedded on the surface area, thereby time running backward in orientation in the parallel universe, along with the perspective of eternal inflation and divided subspaces giving birth to twin universes are provided here. This time curve being responsible for creating an exponentiality of time frames, growing in layers, giving us the perception of the confabulations being an indication of the previously connected worlds.

Keywords: Singularity – 2-Time dimensions – Simulations – Big Bang – Entanglement – Entropy – Mandela Effect – Eternal Inflation – Multiverse

1. Introduction

CMB or CMBR is an electromagnetic radiation in big bang cosmology, which shows the anisotropy remnant from an early universe. In naked eyes and optical telescopes the space appears to be black completely between stars and galaxies, however, a faint background noise is detected in powerful radio telescopes which are not at all related with any intergalactic objects like stars or galaxies, while in the microwave regime, the glow is the strongest, which had been accidentally discovered by Arno Penzias & Robert Wilson, for which they have been awarded the Noble Prize in Physics. CMBR shows the strongest evidence of the big bang evolutions, and due to the dark energy, as the universe expanded, the radiation gets cooler and presently in the form of microwaves. The frequency of the photon energy corresponds to about $6.626 \cdot 10^{-4}\ eV$. Defining the spectral radiance of $dE_\lambda/d\lambda$ the wavelength is around $\sim 1.062\ mm$ $(281.02\ GHz,\ 1.162 \cdot 10^{-3}\ eV)$ Photons. Small irregularities or anisotropies are present in the CMBR when accounted for based on spectral radiance, where the ultimate form of anomaly leads to the construct of the axis of evil in Fig. 3 along with the cold spot in Fig. 2. There are the thermal variations of the quantum fluctuations, of matter which expanded by the time evolution after the big bang to accumulate throughout the observable universes. The power spectrum $C \equiv \langle |a_{\ell g}|^2 \rangle$ can be computed by decomposing the sky into spherical harmonics, as such,

$$T(\theta, \varphi) = \sum_{\ell g} a_{\ell g} Y_{\ell g}\ (\theta, \varphi) \qquad (1)$$

Where, $a_{\ell g}$ is the mean temperature, $Y_{\ell g}$ is the fluctuation in temperature with (θ, φ) as the spherical harmonics, g is the Azimuth number with ℓ as the multipole number having the values as 0,1,2,3 ... depending on the poles.

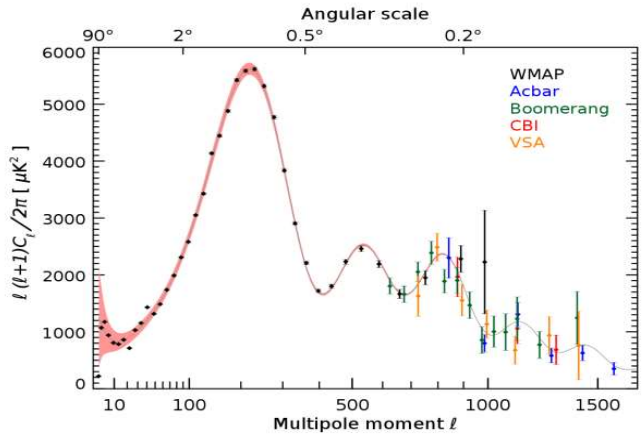

Fig. 1 Temperature anisotropy for CMBR power spectrum in angular scale for multipole moment, with the data, come from the WMAP (2006), VSA(2004), the WMAP (2006), Acbar (2004) Boomerang (2005), CBI (2004) and also shown is a theoretical model (solid line). *Courtesy: WMAP Science Team, NASA.*

It is highly probable from the eternal inflation theory [1] [2] [3] [4] that the Big Bang doesn't give birth to a single universe like our own, rather it gives birth to a multiple conjugate of universes and at the onset of creation, those universes, became attached employing a union of 2-imaginary R^2 closed curves of time embedded in the R^3 topology. This R^2 acts as a hidden imaginary dimensions of time with orientations of universe α having C^1 circle (for the sake of calculations the R^2 closed curves is denoted as a circle) being attached to universe β having C^2 circle as temporal dimensions with a condition that the temporal orientations of C^1 is opposite to that of C^2 thereby forming a closed contour (imaginary R^2 embedded inside real R^3). This helps the C^1 and C^2 attached as a closed contour loop of imaginary time. There are more universes with opposite orientations of R^2 but for the sake of calculation, it has been considered only 1.

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The subsequent inflation and expansion make the universes detached to a single body and the R^2 curve vanishes or loop eliminated. However, they are entangled particles if we consider each universe as a single particle with opposite complex (or imaginary) time orientations. The singularities have been identified as $+\frac{i}{\sqrt{3}}$ for our universe and $-\frac{i}{\sqrt{3}}$ for the other universe as a detached and embedded parameter as $\pm\frac{i}{\sqrt{3}}$ in C^1 and C^2 having the affine index π. This results in the 'AXIS of the EVIL" or the ERIDANUS Super-void or the CMBR [5] Coldspot [6] identifiable in the southern celestial hemisphere of the universe subtends an angle about 5° roughly $\sim 300\ Mpc$ at redshift $Z \simeq 1$with a density smaller than the average ambient redshift paving an evidence as the earlier attached region with a parallel universe [7] or conjugate universe having galactic coordinates $I = 207.8^\circ$ and $b = -56.3^\circ$. The 2-universes as seen entangled with each other, therefore, there exists an entropy and it is the $log_2\epsilon$ where $\epsilon \neq 0$ via a time evolution operator and its complex conjugate as T, T^* respectively, the entropy-entanglement relation has been achieved. This is a spot where temperature changes occur at .0002% while in other areas temperature changes occur at 1 part in 10000 or .001%. So, obviously from the cosmic microwave background radiation data, the temperature of the universe after 3,80,000 years is 3000 Degree Kelvin while on a particular spot it is less than .0002%. This indicates that this "SUPERVOID" cold spot is the result of a collision of the parallel universe which drags the CRMB radiation away from that area making it a super cold void in space. Here friction doesn't generate heat rather drags all the radiation away at an early stage of the universe.

This associated identity of the twin universe conjecture, keeps track of all the time frames via 2-time dimensions [8], and the diameter of the observable universe is 93 billion light-years, where it's been hypothesized, the 2-dimensions of time takes the form of a closed curve in the universe rather than a 1-dimensional line, however, this R^2 topology of the time curves is initially in a non-local spectrum, which becomes local and projected as a R^1 line in locally spatial regions. This R^2 however, got embedded at the surface area of the universes having a co-dimensionality of R^3 which makes the additional dimensions of R^2 hidden, this in turn creates a singularity points, where the orientations of the 2-loops of R^2 of the 2-universes got connected employing an opposite orientations of the R^2 time in one universe than the other, giving us a conclusion that, time if runs forward in our universe, it might run backward in the entangled parallel universe.

This notion of timekeeping is important to conclude the fact that, this type of $R^2 \overset{J}{\Leftrightarrow} R^2$ Junction points may hold the key to observing the unusual effects like the Mandela effect, déjà vu, [9] [10] [11] confabulations which is the resultant of the hidden R^2 (extra time dimensions) being entangled and entropic to each other, which has a natural conclusion, that our universe is simulated rather than a realistic model and these simulations [12] [13] [14] grows over time exponentially having a solution, which has the following approximations.

Imagine the famous P vs. NP conjecture. There are 2 ways of accumulation, either polynomial or non-polynomial (exponential) where the exponential growth takes advantage of the polynomial growth due to the properties of the mathematics. If there are N factors and surrounding it are n factors, then the simulation should accumulate in N^n ways, rather if each n has a resultant p parameters associated with them, then the simulations would take place in N^{n^p} ways which is a byproduct of exponentiality, and this random and pervasive exponentiality in simulations provides glitches like that we observe as confabulations whose further growth results in changing the fundamental constants of nature$(G, c, \hbar)$. These glitches if are considerable paves the way for parallel universes connected in a closed contour, through singularity points.

2. Methodology

2.1 Dimensions as Contour Curves

Here, in this section, we will provide an implicit logic and diagrams in support of the arguments with the help of rigorous mathematics, paving the way to depict the reality of time as related to the parallel universes.

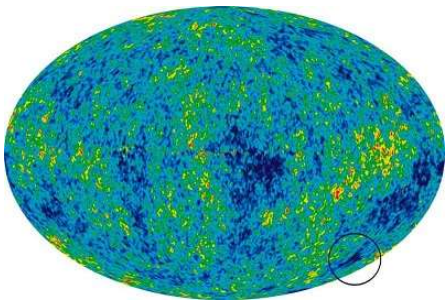

Fig. 2 The circle marks the region of the cold spot or void having a temperature of $\sim 70\mu K$ colder than the ambient temperature. . *Courtesy: WMAP Science Team, NASA.*

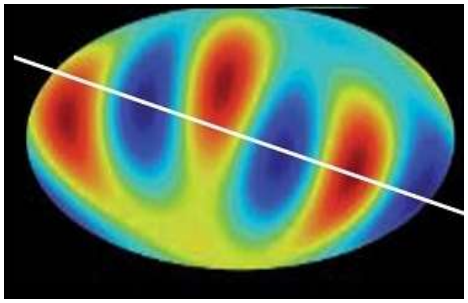

Fig 3 The OCTUPOLE axis is a part of the AXIS of EVIL and shows blue regions colder than the red regions showing a clear indication of excessive radiation anisotropy (colder) in the blue region[6].

Fig. 4 The 2-spherically symmetric universe (the universe need not be spherically symmetric and there could be more than 2 of them), however, it has been considered for the simplicity of calculations where the R^2 black circles represent e^{it} time embedded in R^3 having real and imaginary parts (or dimensions) touched each other providing the cold void as hypothesized in this paper at the onset of creations which would be detached and entangled after separation as the universe begins to inflate and expand thereby paving the way for the leap of washed away radiation and complex time (of opposite orientations) in the universes as $e^{it} \otimes \widetilde{e^{it}}$.

Here for the 2 universe, α, β, the values of time (provided they are non-local and curved) initially parameterized for each of the universe as,

$$\alpha = \left(e^{it}\right)_1 => (Cost + iSint)_1 \quad (2)$$

$$\beta = \left(\widetilde{e^{it}}\right)_2 => \left(\widetilde{Cost} + \widetilde{iSint}\right)_2 \quad (3)$$

Here, $Cost$ and $\widetilde{Cost}$ represents real-time dimensions that we experience in our 4-d universe while, $iSint$ and $\widetilde{iSint}$ represents the

imaginary time being hidden from observations which has an implicit property of running forwards as well as backward.

For 'n' universes the equation (1) and (2) can be given by,

$$\prod_{n=1}^{\infty}(e^{it})_n \tag{4}$$

Provided from, equation (3), 'n' must correspond to a number that is opposite in orientations other than $(e^{it})_1$. The smooth curve $\rho: [a,b] \to \boldsymbol{C}$ where the identified endpoints $(\rho(a) = \rho(b))$ defines the contours Γ as,

$$\Gamma = \sum_{n=1}^{\infty} \lambda_n \tag{5}$$

Where 'n' defines the oppositely oriented curve other than λ_1.

If

$$\rho(t) = e^{it} \tag{6}$$

Then,

$$\oint_C \frac{1}{\rho} d\rho \tag{7}$$

While evaluating this integral, if the unit circle $|\rho| = 1$ as a contour C parameterized by $\rho(t) = e^{it}$ with $t \in [0,2\pi]$ then $\frac{d\rho}{dt} = ie^{it}$ then,

$$\oint_C \frac{1}{\rho} d\rho = \int_0^{2\pi} \frac{1}{e^{it}} ie^{it} dt = i\int_0^{2\pi} 1\, dt = [t]_0^{2\pi} i = (2\pi - 0)i = 2\pi i \tag{8}$$

Similarly,

$$\oint_C \frac{1}{\rho} d\rho = \int_{2\pi}^{0} \frac{1}{e^{it}} ie^{it} dt = -2\pi i \tag{9}$$

Thereby, it can be seen that the above two equations representing opposite orientations and provides the solution as,

$$2\pi i \quad \overbrace{Orientations}^{Opposite} \quad - 2\pi i \tag{10}$$

To make the affine parameter, the integral implemented as,

$$\int_{-\pi}^{\pi} \frac{1}{1+3(Cost)^2} dt \tag{11}$$

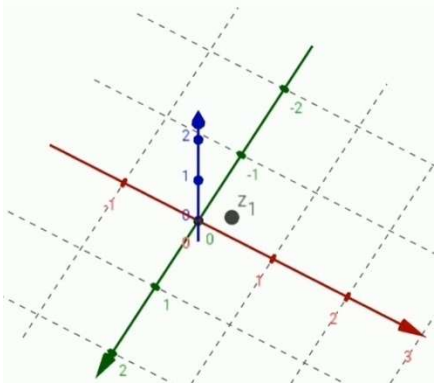

Fig. 5 If we take equation (10) as $Z_1 = 1/(1 + 3\,(Cos\ t)^2)$ and took the value of t as $e^{i\varphi}$ and $e^{-i\varphi}$ then the Z_1 dot rotates clockwise in $e^{-i\varphi}$ and counterclockwise in $e^{i\varphi}$.

Here, $\rho = e^{it}$, $Cost = \frac{1}{2}\left(e^{it} + e^{-it}\right) = \frac{1}{2}\left(\rho + \frac{1}{\rho}\right)$ and $\frac{d\rho}{dt} = i\rho$, $dt = \frac{d\rho}{i\rho}$, its safe to proceed towards the derivation [15] [16] [17] [18] [19],

$$\oint_C \frac{1}{1+3\left(\frac{1}{2}\left(\rho+\frac{1}{\rho}\right)\right)^2} \frac{d\rho}{i\rho}$$

$$\oint_C \frac{1}{1+\frac{3}{4}\left(\rho+\frac{1}{\rho}\right)^2} \frac{d\rho}{i\rho}$$

$$\oint_C \frac{-i}{\rho+\frac{3}{4}\rho\left(\rho+\frac{1}{\rho}\right)^2} d\rho$$

$$-i\oint_C \frac{1}{\rho+\frac{3}{4}\rho\left(\rho^2+2+\frac{1}{\rho^2}\right)} d\rho$$

$$-i\oint_C \frac{1}{\rho+\frac{3}{4}\left(\rho^3+2\rho+\frac{1}{\rho}\right)} d\rho$$

$$-i\oint_C \frac{1}{\frac{3}{4}\rho^3+\frac{5}{2}\rho+\frac{3}{4\rho}} d\rho$$

$$-i\oint_C \frac{4}{3\rho^3+10\rho+\frac{3}{\rho}} d\rho$$

$$-4i\oint_C \frac{1}{3\rho^3+10\rho+\frac{3}{\rho}} d\rho$$

$$-4i\oint_C \frac{1}{3\rho^4+10\rho^2+3} d\rho$$

$$-4i\oint_C \frac{\rho}{3(\rho+\sqrt{3}i)(\rho-\sqrt{3}i)\left(\rho+\frac{i}{\sqrt{3}}\right)\left(\rho-\frac{i}{\sqrt{3}}\right)} d\rho$$

$$-\frac{4i}{3}\oint_C \frac{\rho}{(\rho+\sqrt{3}i)(\rho-\sqrt{3}i)\left(\rho+\frac{i}{\sqrt{3}}\right)\left(\rho-\frac{i}{\sqrt{3}}\right)} d\rho$$

The singularities are $\pm\frac{i}{\sqrt{3}}$, for universe $\alpha\ or\ C_1$ is $+\frac{i}{\sqrt{3}}$ and $\beta\ or\ C_2$ is $-\frac{i}{\sqrt{3}}$. Then the following can be deduced,

$$-\frac{4i}{3}\left[\oint_{C_1} \frac{\frac{\rho}{3(\rho+\sqrt{3}i)(\rho-\sqrt{3}i)\left(\rho+\frac{i}{\sqrt{3}}\right)}}{\left(\rho-\frac{i}{\sqrt{3}}\right)} d\rho + \oint_{C_2} \frac{\frac{\rho}{(\rho+\sqrt{3}i)(\rho-\sqrt{3}i)\left(\rho-\frac{i}{\sqrt{3}}\right)}}{\left(\rho+\frac{i}{\sqrt{3}}\right)} d\rho\right]$$

$$-\frac{4i}{3}\left[2\pi i\left(\frac{\rho}{(\rho+\sqrt{3}i)(\rho-\sqrt{3}i)\left(\rho+\frac{i}{\sqrt{3}}\right)}\right)_{|\rho=\frac{i}{\sqrt{3}}|} + 2\pi i\left(\frac{\rho}{(\rho+\sqrt{3}i)(\rho-\sqrt{3}i)\left(\rho-\frac{i}{\sqrt{3}}\right)}\right)_{|\rho=-\frac{i}{\sqrt{3}}|}\right]$$

$$\frac{8\pi}{3}\left[\frac{\frac{i}{\sqrt{3}}}{\left(\frac{i}{\sqrt{3}}+\sqrt{3}i\right)\left(\frac{i}{\sqrt{3}}-\sqrt{3}i\right)\left(\frac{i}{\sqrt{3}}+\frac{i}{\sqrt{3}}\right)} + \frac{-\frac{i}{\sqrt{3}}}{\left(-\frac{i}{\sqrt{3}}+\sqrt{3}i\right)\left(-\frac{i}{\sqrt{3}}-\sqrt{3}i\right)\left(-\frac{i}{\sqrt{3}}-\frac{i}{\sqrt{3}}\right)}\right]$$

$$\frac{8\pi}{3}\left[\frac{\frac{i}{\sqrt{3}}}{\left(\frac{4i}{\sqrt{3}}\right)\left(-\frac{2}{i\sqrt{3}}\right)\left(\frac{2}{i\sqrt{3}}\right)} + \frac{-\frac{i}{\sqrt{3}}}{\left(-\frac{4i}{\sqrt{3}}\right)\left(\frac{2i}{\sqrt{3}}\right)\left(-\frac{2i}{\sqrt{3}}\right)}\right]$$

$$\frac{8\pi}{3}\left[\frac{\frac{i}{\sqrt{3}}}{i\left(\frac{4}{\sqrt{3}}\right)\left(\frac{2}{\sqrt{3}}\right)\left(\frac{2}{\sqrt{3}}\right)} + \frac{-\frac{i}{\sqrt{3}}}{-i\left(\frac{4}{\sqrt{3}}\right)\left(\frac{2}{\sqrt{3}}\right)\left(\frac{2}{\sqrt{3}}\right)}\right]$$

$$\frac{8\pi}{3}\left[\frac{\frac{1}{\sqrt{3}}}{\left(\frac{4}{\sqrt{3}}\right)\left(\frac{2}{\sqrt{3}}\right)\left(\frac{2}{\sqrt{3}}\right)} + \frac{\frac{1}{\sqrt{3}}}{\left(\frac{4}{\sqrt{3}}\right)\left(\frac{2}{\sqrt{3}}\right)\left(\frac{2}{\sqrt{3}}\right)}\right]$$

$$\frac{8\pi}{3}\left[\frac{\frac{1}{\sqrt{3}}}{\frac{16}{3\sqrt{3}}} + \frac{\frac{1}{\sqrt{3}}}{\frac{16}{3\sqrt{3}}}\right]$$

$$\frac{8\pi}{3}\left[\frac{3}{16} + \frac{3}{16}\right]$$

$$\pi \tag{12}$$

Now, as it has been mentioned that these conjugate universe with an affine parameter π could be represented as the

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radius of a single loop by merging of loops of opposite orientations as seen from equation (8) and (9) into equation (10) with a single loop diameter $2R$ with R to be vanishingly small representing the circumference with the affine parameter π in equation (12) to be,

$$\lim_{R\to(infinitesimal)} 2\pi R \tag{13}$$

2.2 Entanglement & Entropy

There is a landscape of vacua and the landscape consists of 10^{500} universes approx. The cold void that has been observed by WMAP and Sloan Digital Sky Survey has a span of around 900 million light-years which is too huge to be considered and therefore, named as a supervoid. The split-second time after the Big Bang when the universe is very very small as in equation (13), then the conjugate birth of universes at the onset of Big Bang produces quantum vacuum fluctuations at the intersecting regions of the 2-time curves having opposite orientations as seen from equation (9), which shows that the real-time being started to form, the time being complex (as hypothesized), the imaginary counterpart produces a single loop of imaginary time from 2-loops of opposite orientations, provided the imaginary time which runs forward in our universe must be backward in the other or parallel universe as per the assumption of this paper. The quantum vacuum fluctuations being immensely strong on the junction of our universe with the parallel universe, the gravity being washed away and the negative pressure dominates which makes the process like; as during the expansion, the cold region grows with time, the fluctuation which leads to negative pressures like (Casmir effect), the attractive gravity kinds of changes into repulsive gravity and the concentration of stars are expanded outwards providing a picture of very less concentration of stars in the cold void along with the excessive anisotropy of the void being cooler than the ambient regions demonstrates the fact that the radiation being swapped away by the parallel universe due to the corrosion of separation when the universe grew larger and expanded considerably. It has to be mentioned here that the two universes of more than two as expressed by equations (3) and (4) describes the portions as an entanglement zone where both the universes are entangled, however, in course of time, they are separated by the imaginary time curves provides a source of entanglement between them such that one effects the another with the orientation of imaginary time clockwise in one universe while anticlockwise in another universe as observed by CMBR anisotropy in the cold spot about $\sim 70\mu K$ and 900 million light-year spread. To proceed with the entangled state, let's define the temporal operator (or temporal state operator) acting on 2 universes α and β as,

$$\left(e^{it}\right)_{C_1} \otimes \left(\widetilde{e^{it}}\right)_{C_2} \tag{14}$$

This implies the relation as,

$$\left|\left(e^{it}\right)_{C_1}\right\rangle_\alpha \otimes \left|\left(\widetilde{e^{it}}\right)_{C_2}\right\rangle_\beta \tag{15}$$

Now, if it can be considered [20] [21] [22] [23] [24] [25] [26] [27] as a Ket factor $|\psi\rangle_{\alpha\beta}$ and assigns $|i\rangle_\alpha$ for $\left(e^{it}\right)_{C_1}$ and $|j\rangle_\beta$ for $\left(\widetilde{e^{it}}\right)_{C_2}$ as the basis vectors, the required solution would be an entangled state as,

$$|\psi\rangle_{\alpha\beta} = \sum_{i,j} e_{ij} |i\rangle_\alpha \otimes |j\rangle_\beta \tag{16}$$

If we consider the orientations of equation (8) and (9) as 0 and 1 being oppositely oriented as $2\pi i$ and $-2\pi i$, then the relation yields as an entangled state of the 2 universe as,

$$\frac{1}{\sqrt{2}}\left(|0\rangle_\alpha \otimes |1\rangle_\beta - |1\rangle_\alpha \otimes |0\rangle_\beta\right) \tag{17}$$

The density parameter ϵ can be given by,

$$\epsilon = \sum_{i,j} \gamma_i \left[\sum_j \left(e_{ij}|ij\rangle_\alpha \otimes |ij\rangle_\beta\right)\right]\left[\sum_k \left(\widetilde{e_{ik}}\langle ik|_\alpha \otimes \langle ik|_\beta\right)\right] \tag{18}$$

Where probability,

$$\sum_j |e_{ij}|^2 = 1 \tag{19}$$

Then, the maximally entangled state $\epsilon \in \left(e^{it}\right)_{C_1} \otimes \left(\widetilde{e^{it}}\right)_{C_2}$ if the reduced state of ϵ as the diagonal matrix,

$$\begin{bmatrix} \frac{1}{n} & & \\ & \ddots & \\ & & \frac{1}{n} \end{bmatrix} \tag{20}$$

There exists a close relation of the time evolution operator T evolving from $\alpha(t), \beta(t)$ to $\alpha(t_1), \beta(t_1)$ such that $t_1 \gg t$. The evolution of time makes the entropy larger and this result in the entropy induced entanglement such that α, β are attached at time t as a pure state, but separated and entangled at time t_1 due to the increase of entropy. The temporal evolution operator T, density parameter ϵ and entropy S, Hamiltonian H can be thought of having an explicit relation given by two relations as,

$$T(t, t_1) = exp\left(\frac{-iH(t,t_1)}{\hbar}\right) \tag{21}$$

$$S(\epsilon) = S(T_\epsilon T^*) \tag{22}$$

Where T^* in equation (40) is the complex conjugate time evolving operator as $iSint$ and $\widetilde{iSint}$ in equations (1) and (2).

The Von Neumann entropy with relation to Shannon entropy then could be given by,

$$S(\epsilon) = -Tr(\epsilon\, log_2 \epsilon) = -\sum_i \epsilon_i log_2\, \epsilon_i|_{\epsilon \neq 0} \tag{23}$$

The maximal entangled state in $-\sum_i \epsilon_i log_2\, \epsilon_i$ occurs when the eigenvalue $\epsilon_i = 0.5$.

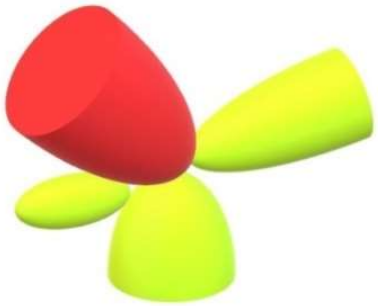

Fig. 6 The red-colored is our universe which supposedly have a time orientation of $-2\pi i$ and the other green universes which can be any number greater than one having an opposite orientation of $2\pi i$ connected with our universe via equation (9) with a merging of loop of imaginary time arising out of embedded R^2 in R^n (ours is R^3 manifold) giving rise to cold voids in space-time. In our case there is only 1 cold void, therefore we can neglect any two green universes and considered only 1 parallel universe.

2.3 Glitches in Simulations

The junction conditions must suffice, the junction being J there exists a mapping factor A^* to identify the required two relations,

$$R^2 \overset{J}{\Leftrightarrow} R^2 \rightarrow {R^2}_{C_1} \overset{J}{\Leftrightarrow} {R^2}_{C_2} \tag{24}$$

$$A^*: \partial 2\pi i \rightarrow -\partial 2\pi i \rightarrow \partial 2\pi i \rightarrow -\partial 2\pi i \tag{25}$$

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The ∂ denotes some partial portions of the C_1 and C_2 with J satisfies a dimensionality D assuming our universe has 10 dimensions and a henceforth metric $\tilde{\xi}_{\mu\nu}$ sufficing the diagonal parts of map A^* to provide a solution as,

$$D_c = \sqrt{\frac{D-2}{2}} \rightarrow \sqrt{\frac{10-}{2}} = 2 \tag{26}$$

$$\tilde{\xi}_{\mu\nu}\widehat{A^*}^{\mu}\widehat{A^*}^{\nu} = \begin{pmatrix} \partial 2\pi i & 0 & 0 & 0 \\ 0 & -\partial 2\pi i & 0 & 0 \\ 0 & 0 & \partial 2\pi i & 0 \\ 0 & 0 & 0 & -\partial 2\pi i \end{pmatrix} \tag{27}$$

With a vanishing Trace as $Tr(\partial 2\pi i, -\partial 2\pi i, \partial 2\pi i, -\partial 2\pi i)$ making a fundamental claim that, $-\partial 2\pi i$ if Wick rotated as $-\partial 2\pi i * i$ then this provides an identical solution as $\partial 2\pi$ where the negativity and imaginary cancels each other out providing a positive identity as the fundamental domain $\partial 2\pi$ which can have a margin of errors through the NP (Non-Polynomial) factor as the overlapping of simulations [12] [13] [14] (provided we are living in a simulated world) giving the glitch exponential $\mathcal{g}$ as

$$\mathcal{g} = a^{b^{c^{d^{\cdot}}}} \xrightarrow{encoded\ under} \partial 2\pi \begin{cases} \partial 2\pi i \\ -\partial 2\pi i \end{cases} \tag{28}$$

With $a, b, c, d, \ldots$ being the consecutive layers of the simulated glitches. Now, this $\mathcal{g}$ can be classified as 2 subgroups as $\mathcal{g}^+$ and $\mathcal{g}^-$ where they varies as,

$$\mathcal{g} = \begin{cases} \mathcal{g}^+, & High\ Errors \\ \mathcal{g}^-, & Low\ Errors \end{cases} \tag{29}$$

These $Low\ Errors$ could be termed as the Mandela effect, déjà vu or confabulations arising out of the glitch matrix, where the $High\ Errors$ could be something to change the fundamental constants of nature like $G, c, \hbar$, however, this is a time evolution parameter and this glitch takes time to get noticed even if it's having an error of 1 part in 10^{13} yielding to the fact that as $\hbar = \frac{h}{2\pi}$ the $\hbar$ should be replaced by ∂h due to the fact $\mathcal{g} = \hbar * \partial 2\pi = \frac{h}{2\pi} * \partial 2\pi \approx h$ where the Plank's constant itself needs to be segmented to modify the physical reality to adjust with the simulations or to compensate the glitches' of the simulations with the Plank Identities (constants) ensuring a safe paradigm of physics. But, as we have mentioned, $High\ Errors$ being a time evolution parameter, should take time to alter the physical reality (if it's augmented as a simulation matrix).

2.4 Conjugate Universes

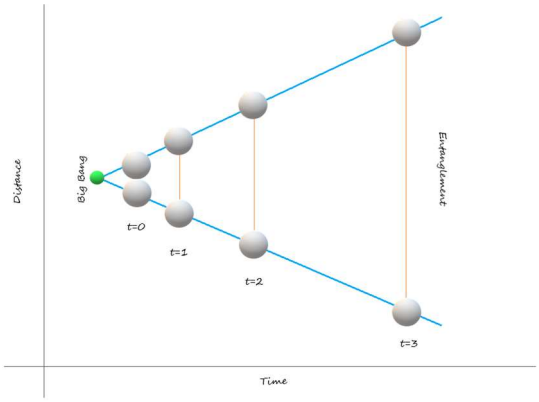

Fig. 7 The complete evolution of the Entanglement-Entropy of the universe is visible with respective scales of distances and time, showing, the time evolution from $t = 0$ as the beginning phase after the big bang where the two universes are conjugated, and thereby in subsequent times $t = 1, t = 2, t = 3$, as the universe expands, the conjugated pair breaks up and the universes are getting further apart in distant space-time.

Fig. 6 is useful to conjecture the conjugate nature of the universes, which can be stated as an *absolute split function*. However, it is still a probability whether this scenario happened or not 13.8 billion years ago. The *EKPYROTIC* model won't support the theory of conjugate universes, as it is dedicated to D*p*-Brane cosmology, but in the general sense, it's not hard to believe, that there exists a twin universe at the onset of the big bang, which radially flies apart with the evolution of time, as the universe expands. This generates an action of the universe in a *multiverse* domain, where the action itself responsible for the behavior of a single universe floating in the multiverse-medium fluid. This action could be denoted by this operator $\nVdash$ and this motion indices another probability of the refinement of the previous idea. The field action could be denoted by,

$$\nVdash = \oiiint |\mathcal{L}\psi \times \zeta f(\sigma)|_{\tau}^{\pm\frac{i}{\sqrt{3}}} \quad \Delta\mathcal{H}^c \tag{30}$$

Where $\mathcal{L}$ is the Lagrangian multiplied by all the matter fields ψ with a split function parameter $f(\sigma)$ multiplied by an affine variable ζ all through the evolution of time τ. The action $\nVdash$ is absolute in its own frame of conjugate evolution with $\pm\frac{i}{\sqrt{3}}$ as the singularity points with $\mathcal{H}^c$ be the complex hyper-coordinates. The affine variable ζ satisfies the idea of more than 1 split functions $f(\sigma)$ where the variable can be represented by,

$$\zeta = \bigvee_{i=1}^{\infty} \gamma_i \tag{31}$$

Dictating that, there could be infinite possibilities of the universes, and not limited by 2, however, 2 have been an easier way to derive the split function $f(\sigma)$. Here σ is a 2-dimensional parameter taking the value as $x\ or\ y$ in subsequent cases. $f(\sigma)$ has 2 sets of probabilities with each set consisting of two subsequent functions, this originates probably in our mind that, there can be two reasons, in the field action $\nVdash$ of the universe in the multiverse domain. Reasons are,

1. The universe started out as a conjugate one, then splits apart in time, separating thereon as entangled pairs in the multiverse which makes the cold spot visible in the southern hemisphere of the CMBR anisotropy.
2. The universe started out as a conjugate one, but it then separated as an entangled one, which periodically gets into contact, after completing each sinusoidal nodes, giving cold spots with washed away radiations, and then separated out with a phase gap or time gap, going further from each other, and again meets together before getting further apart.

The first point is sufficient enough to prove that, the cold spot happened once, but the second point raises us a question, as to, whether, in the future, there will be more cold spots like this, perhaps the universe is too young to contain numerous cold spots. This suffices a pair of equations which looks the following [28],

$$f(\sigma) = \begin{cases} x = -y, & y < 0 \\ x = y, & y > 0 \end{cases} \Big| \ POINT\ 1 \tag{32}$$

Or,

$$f(\sigma) = \begin{cases} y = Sin(x), & x > 0 \\ y = -Sin(x), & x > 0 \end{cases} \Big| \ POINT\ 2 \tag{33}$$

Combining equation (32) and (33), the picture that we get is,

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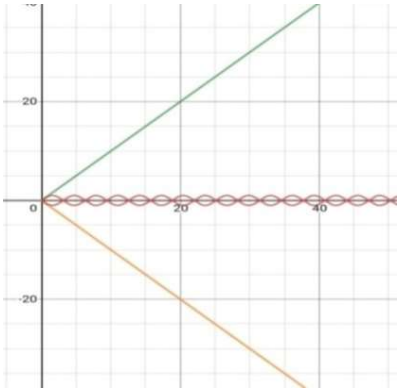

Fig. 8 The green and orange lines show the possibility of point 1 or equation (50) as a diverging entity from the origin *0* treated as the source of creation or the Big Bang, whereas, the red lines showing the point 2 or equation (51) with a possibility of a sinusoidal motion of the two universes in the multiverse domain, that meets only at a periodic nodes thereby giving rise to numerous cold spots, over a large period.

2.5 Towards an Eternal Inflation

To extrapolate the expansion of the universe using general relativity, through backward in time, the singularity appears to be of infinite density and temperature. This gravitational singularity has an irregular behavior where the law of general relativity is not sufficient or adequate to explain the quantum effects. The different models, which are out there, it is impossible to explain the singularity – the so-called *Plank epoch*. Depending upon the measurements of Type Ia Supernovae, the temperature fluctuation in the *Plank epoch* results in the anisotropy of the CMBR and the age summoned to have passed $13.899 \pm 0.021 * 10^9$ years. However, being extremely dense at the early epoch, the universe did not collapse to a black hole, and as this doesn't happen to be the reason, matter at that time must have been evenly distributed with a negligible density gradient. The subsequent inflation and expansion could be termed as [29] [30] [31],

$$v = H_0 D \qquad (34)$$

Where v is the velocity at which the distant galaxy recedes over time, D is the commoving distance relating to the object, H_0 is the Hubble's constant, measured to be $70.4^{+1.3}_{-1.4}$ Km/Sec/Mpc by WMAP.

Eternal Inflation [32] [33] [34] [2] [3] [4] theory is the best model fit for the aforesaid theory. It has been considered as an extension or outgrowth of the big bang theory. According to the model, the phase of the universe that goes through this inflation is eternal or lasts forever throughout the universe. As expansion occurs rapidly, most fractions of the universes at a given time are inflating. This results in an everlasting multiverse that is generically eternal to the future. After the big bang, the universe goes through this phase which results in the homogeneity and equal matter distribution in the universe. However, as there is no possible way out for this inflation to end, the inflationary phase could be treated as a false vacuum that generalizes or decays to 'empty bubbles' of true vacuum having an expansion velocity to that of the close of light speed, thus could not coalesce to keep up with the remaining inflating universe. Quantum fluctuations may result in sprouting the inflation, and that fluctuation is so random, that, the universe being produced as a hyper-dimensions may end up into even codimensions. The universe whose quantum fluctuations is more in the inflammatory period, have a natural tendency to dominate among another universe which 'self reproduces' say 1 universe ends up into 2 universe where each of the 2 universe ends up into another pair of 2 universe, which ultimately leads to 4 universes, that are again 'self-reproducing' thereby leading to an eternally or forever inflation.

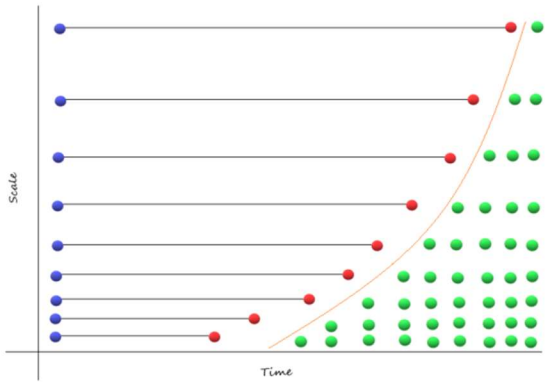

Fig. 9 Although there is no reason to believe that entanglement occurs only between 2, but for the sake of brevity we can assume the red and blue dots as the universe with opposite time orientations which leads to the entanglement and the arrow shows the entropy-entanglement pair, however, it is to be noted, that there exists enough green dots as the universe without entanglement i.e., without any conjugated pairs. The red divider (curved line) dictates the marker between the entangled universe and the non-entangled universe where the non-entangled universe reduces over time, means the more the time pass, the more the universe born as entangled.

Let V be the 'parent' universe spanning over a field K and Q be a subspace of V. The equivalence relation $\sim$ on V could be stated that $x \sim y$ for $x - y \in N$ i.e, x is related to y if one can be obtained from the other by adding an element to N. The coset of x is denoted by [35] [36],

$$[x] = x + N \qquad (35)$$

Now, if Q be a subspace of V, then $V \ mod \ Q$ should give U establishing the relation,

$$V = U \oplus Q \qquad (36)$$

Then, the quotient space $V \ mod \ Q$ is naturally isomorphic to U. An epimorphism relation from V to the quotient space $V \ mod \ Q$ or V/Q could be obtained by sending x to its equivalence class $[x]$.

$$V \xrightarrow{f} Q \qquad g_1, g_2 : U \quad (37)$$

$$g_1 \circ f = g_2 \circ f \rightarrow g_1 = g_2 \qquad (38)$$

If Q is a subspace of V then V/Q is called the *codimension* of Q in V as follows,

$$codim(Q) = dim(V/Q) = dim(V) - dim(Q) \qquad (39)$$

Similarly, for Quotient space V/U, the relation suffices as the following equation,

$$codim(U) = dim(V/U) = dim(V) - dim(U) \qquad (40)$$

Equating equation (39) and (40), we obtain the following relations,

$$dim(V) - dim(Q) = dim(V) - dim(U) \qquad (41)$$

Or,

$$dim(Q) = dim(U) \qquad (42)$$

This signifies, that, if V is the parent universe and two quotients can be done as V/Q and V/U with Q and U be the 'reproducing mini-universe' from 'parent universe, then the reduced dimension from V would have an equal identity as the codimensions Q and U. Returning to equation (42) if we add a split operator $\aleph$ with the probability factor $*^2 = 1$ along with the junction J between 2 'child

universes' the resulting or modified version of equation (42) appears to be,

$$\overset{Q}{U}\langle R^2{}_{C_1+\frac{i}{\sqrt{3}}} \overset{J}{\Leftrightarrow} R^2{}_{C_2-\frac{i}{\sqrt{3}}}\rangle \aleph^{*^2} \quad (43)$$

Where,

$$\aleph^{*^2} = \frac{1}{\mathcal{F}}(U \oplus Q) \quad \mathcal{F} \in \mathbb{R} \quad (44)$$

Yields the result,

$$\frac{1}{\mathbb{N}}(U \oplus Q) \text{ and } \frac{1}{\mathcal{M}}(U \oplus Q) \quad \exists\, \mathcal{M}, \mathbb{N} \in \mathbb{R} \text{ and } \mathcal{M} \neq \mathbb{N} \quad (45)$$

2.6 Non-Gaussian Cosmic Textures

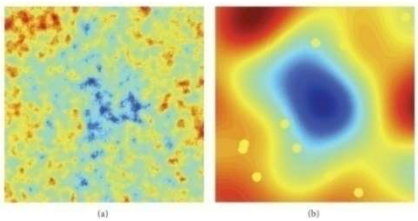

Fig. 10 (a) In the cosmic textures non-Gaussian regime with temperature fluctuations in WMAP data, (b) in the wavelet spaces, the small yellow circles correspond to the extragalactic source. The coordinates for the cold spot here ($\theta = -147°, \varphi = 209°$) [37].

If it has been assumed that the cold spot has been subject to cosmic textures, then those textures represents to some defects in the early universe formation, and the phase transitions associated by certain symmetry breaking as an approach to some high energy physics. If a certain universe breaks from this regime, then they must have washed away the radiations and left an imprint on the CMB photons. The temperature fluctuations could be given by the formulae [37],

$$\frac{\Delta T}{T} = \pm\left\{\frac{\epsilon}{\sqrt{1+4\left(\frac{\vartheta}{\vartheta_c}\right)^2}}, \quad if\ \vartheta \leq \vartheta_* \right. \quad (46)$$

And,

$$\frac{\Delta T}{T} = \pm\left\{\frac{\epsilon}{2} e^{-\left(\frac{1}{2\vartheta_c^2}\right)(\vartheta^2+\vartheta_*^2)}, \right. \quad (47)$$

The Parameters are $\vartheta = 5°, \epsilon = 10^{-4}, \vartheta_* = \sqrt{3}/2\vartheta_c$.

Now, to make a concrete discission, whether cold spot is a generation of cosmic textures of amplitude ϵ and size ϑ providing a non-Gaussian regime added to the random Gaussian of the isotropic CMBR field, a Bayesian probabilistic hypothesis is needed. This states that given a data set $\mathcal{E}$ and some unknown parameters Θ of the hypothesis $\mathfrak{H}_i$, the posterior probability given the data $P(\Theta \mid \mathcal{E}, \mathfrak{H}_i)$ is related to the likelihood probability $P(\mathcal{E} \mid \Theta, \mathfrak{H}_i)$ as,

$$P(\Theta|\mathcal{E}, \mathfrak{H}_i) = \frac{P(\mathcal{E} \mid \Theta, \mathfrak{H}_i) P(\Theta \mid \mathfrak{H}_i)}{P(\mathcal{E} \mid \mathfrak{H}_i)} \quad (48)$$

Where $P(\Theta \mid \mathfrak{H}_i)$ is the measurement of the *priori* knowledge about the aforesaid parameter, $P(D \mid \mathfrak{H}_i)$ is a constant, which states,

$$P(D \mid \mathfrak{H}_i) = \int P(\mathcal{E} \mid \Theta, \mathfrak{H}_i)\, P(\Theta \mid \mathfrak{H}_i)\, \Delta\Theta \quad (49)$$

Now, we would like to obtain the probability of the hypothesis $\mathfrak{H}_0$, given the data $P(\mathfrak{H}_0 \mid \mathcal{E})$ which could be written by the multiplication rule as,

$$P(\mathfrak{H}_0 \mid \mathcal{E}) = P(\mathcal{E} \mid \mathfrak{H}_0) \frac{P(\mathfrak{H}_0)}{P(\mathcal{E})} \quad (50)$$

Which is proportional to equation (48) called the *Bayesian evidence* and inversely proportional to the probability of the data factor $\mathcal{E}$. It is not possible to know the exact probability of the data, but it's possible to get a hint about some factors of the probability of $\mathfrak{H}_0$ which is the relative measurement of the probability among $\mathfrak{H}_0$ and $\mathfrak{H}_1$ given the same data set $\mathcal{E}$, this relative measurement of the probability is treated as a *posterior ratio* β_ρ as,

$$\beta_\rho \equiv \left(\frac{P(\mathfrak{H}_1 \mid \mathcal{E})}{P(\mathfrak{H}_0 \mid \mathcal{E})} = \frac{D_1}{D_0} \frac{P(\mathfrak{H}_1)}{P(\mathfrak{H}_0)}\right) \quad (51)$$

Hence, if $\beta_\rho > 1$, it can be concluded that the hypothesis of the probability factor $\mathfrak{H}_1$ which is the cosmic texture is favored over $\mathfrak{H}_0$ which is the Gaussian CMBR fluctuations [38]. The marginalization of the *posterior priori* as in equation (48) led to the determination of the parameters of the textures as in Fig. 9 (a) as, $\epsilon = 7.3^{+2.5}_{-3.6} \times 10^{-5}$ and $\vartheta = 4.9^{\circ\,+2.8^\circ}_{-2.4^\circ}$ at 95% confidence. The ratio of the *Bayesian evidence* was also 150, which is a strong indication of the texture hypothesis caused by some defects in phase transitional symmetry breaking of the early universe. The CMBR cold spot having covered a region of sky spanning $\approx (0.017)$, the *posterior ratio* β_ρ is 2.5 favoring the hypothesis.

2.7 Poincare Limit & Singularity

Now, holding on to the statement, let's drive into the topological spaces and Ricci flows, as to how a universe splits into two as shown by Hamilton and Grigori Perelman in the *Poincare Conjecture*. This induces a notion of a topological surgery and blowing of singularity, to break one universe evolving into two over a certain, finite time interval. This generalizes the concept of a twin universe birth, more profound and in an elegant way.

Fig. 11 The Poincare limit, of a topological surgery through the blow-up of singularity that develops in a manifold, with an authoritative proof of the birth of twin universes and a means of separating them *credit: Cameron Slayden/Science* [39].

Taking a simply connected Riemann manifold, and improve the metric, by assuming a constant positive curvature spreads on the surface of the manifold, which is simply connected compact closed surfaces – assuming here as a 3-sphere, where we have already pointed out, the codimensions of the subspaces U and Q from a parent space V, through equation (35-40), the 'Ricci flow' equations by improving the metric is stated as [40] [41],

$$\partial_t\, g_{ij} = -2R_{ij} \quad (52)$$

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Where, the metric g_{ij} and Ricci curvature R_{ij} evolves through time $t \to T \;\; \exists\, T > t$ the Ricci flow expands the negative part of the manifold and contracts at the positive part thereby inducing a slowly evolving singularity. The above procedure has a parameter values bounded by the interval $t \in [0,T)$ with $T < \infty$ and there are significant numbers $t \leftrightarrow T$, the Riemann metric converges on the positive curvatures having the metric form initially,$c_t\ g(t)$. These sort of singularities are the curvature singularities having the curvature tensor norm $|\boldsymbol{Rm}|$ which blows up to infinity in the singularity region. Now, the singularity that has been developed over $t \to T$, the Ricci flow becomes, $\langle (M, g_t), t \in [0,T) \rangle$. Let $(p_i\ t_i) \in M \times [0,T)$ be the sequentially evolving points over space-time, such that,

$$K_i := \left|\boldsymbol{Rm}\left(g_{t_i}\right)\right|(p_i) \to \infty \tag{53}$$

As $i \to \infty$, the parabolically rescaled metrics becomes,

$$g_i(t) = K_i\ g\ \left(\frac{K_i\ t_i + t}{K_i}\right), \qquad t \in [-K_i t_i, 0] \tag{54}$$

Due to parabolic dilations, the metric $g_i(t)$ are solutions of the Ricci flow equations like,

$$|\boldsymbol{Rm}| \le K_i \;\; on \;\; M \times [t_i, 0] \tag{55}$$

Hence, in time t_i the maximum curvature attained at p_i, then the pointed Ricci flow $(M, g_i(t), p_i)$, converges smoothly to a limiting ancient Ricci flow given as,

$$\langle M_\infty,\ g_\infty t,\ p_\infty \rangle \tag{56}$$

And the notion of singularity and split has been satisfied as shown in equations (44, 45).

2.8 A & S Points in Jacobi Fields

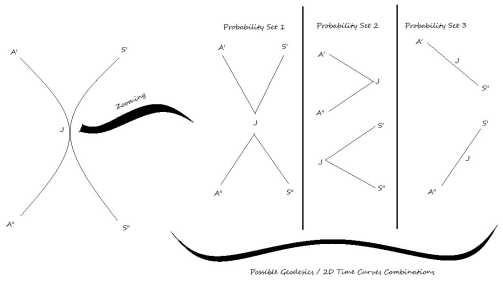

Fig. 12 This is a reproduction of Fig. 3 and here the intersection of the closed geodesics (or here resembling the 2D time curves) where the shape of the universe has been considered as spherical, so, every closed circle is a geodesic and that is here the 2D time curves having a junction point J when zoomed gives 3 sets of possibilities, which shows the A', A", S', S" points having the mutual intersection of C_1 and C_2 at point J having a Jacobi field between them yielding the 6 combinations.

Every great circle $C \;\exists\; C \in R^2$, has to be a geodesic, with a vanishing critical points, if the Riemann manifold M with a metric g as such (Mg) satisfies a Riemann tensor $R^k_{ij\ell}$ with 1 as,

$$R^k_{ij\ell} = \frac{\partial}{\partial x^i}\Gamma^k{}_{i\ell} - \frac{\partial}{\partial x^\ell}\Gamma^k{}_{ij} + \Gamma^m{}_{i\ell}\Gamma^k{}_{mj} + \Gamma^m{}_{ij}\Gamma^k{}_{m\ell} \neq 0 \tag{57}$$

Then the non-vanishing Ricci Tensor,

$$g^j_k R^k_{ij\ell} = R_{j\ell} \neq 0 \tag{58}$$

Then the Ricci scalar,

$$g^j_\ell R_{j\ell} = R \neq 0 \tag{59}$$

Now, to compute the curvature, we have to compute the Kretshmann scalar K which is,

$$K = R^{\mu\nu\lambda\kappa} R_{\mu\nu\lambda\kappa} \tag{60}$$

And, it takes on 3 values depending on the geometry of the R^2 sphere as such,

$K \neq 0$ in case of a sphere.

$K \gg 0$ in case of positive curvature at the outside surface area of the sphere.

$K \ll 0$ in case of negative curvature at the inside surface area of the sphere.

Now, for a closed geodesic γ which suffices the condition, $\gamma: \mathbb{R} \to M$ the critical points for the action principle S satisfies the condition $S: \Psi M \to \mathbb{R}$ defined by,

$$S(\gamma) = \int_a^b g(\gamma)_t\left(\dot\gamma(t), \dot\gamma(t)\right)\, dt \qquad where\ a\ coincides\ with\ b \tag{61}$$

The Euler-Lagrange equation could be given, of a smooth manifold M having the affine connection ∇ has been defined as the curve $\gamma(t)$ with 2 solutions,

$$\nabla_{\dot\gamma}\dot\gamma = 0\ where\ \nabla\ is\ the\ covarient\ derivative\ of\ \dot\gamma \tag{62}$$

$$\frac{d^2\gamma^\prec}{dt^2} + \Gamma^\prec{}_{\mu\nu}\frac{d\gamma^\mu}{dt}\frac{d\gamma^\nu}{dt} = 0 \tag{63}$$

$where\ \gamma^\mu$
$= x^\mu \circ (\gamma)_t\ of\ the\ curve\ (\gamma)_t\ having\ Christoffel\ symbol\ \Gamma^\prec{}_{\mu\nu}$

This provides, the implicit relation,

$$R^2{}_{C_1} \overset{J}{\Leftrightarrow} R^2{}_{C_2} \equiv \frac{d^2\gamma^\prec}{dt^2} + \Gamma^\prec{}_{\mu\nu}\frac{d\gamma^\mu}{dt}\frac{d\gamma^\nu}{dt}\Big\}' \; 'J'\ as\ Points\ of\ Intersection \tag{64}$$

Now, for intersecting geodesics, the acceleration vectors u of one geodesic and x of another geodesic, the vectors accelerate through the equation,

$$(\nabla_u \nabla_u x)^a = -R^k_{ij\ell} u^i x^j u^\ell \tag{65}$$

Now, if we take a smooth parameter along 2 geodesic movements along the geodesics γ_τ with the corresponding vectors u and x the it satisfies the Jacobi fields via 4 equations as follows,

$$u(t) = \frac{\partial \gamma_\tau(t)}{\partial \tau}\Big|\ \tau = 0 \tag{66}$$

$$x(t) = \frac{\partial \gamma_\tau(t)}{\partial \tau}\Big|\ \tau = 0 \tag{67}$$

$$\frac{\nabla^2}{dt}u(t) + R\left(u(t), \dot\gamma(t), \dot\gamma(t)\right) = 0 \tag{68}$$

$$\frac{\nabla^2}{dt}x(t) + R\left(x(t), \dot\gamma(t), \dot\gamma(t)\right) = 0 \tag{69}$$

∇ is the covariant derivative here.

Again considering 2 geodesics, ${\gamma_\tau}^0$ and ${\gamma_\tau}^1$ separated by a certain angle with the parameter $t \in [0, \pi]$ with the separation angle being τ, the distance being measured as,

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$$\left(d\left(\gamma_\tau{}^0(t)\gamma_\tau{}^1(t)\right) = Sin^{-1}\left(Sin(t)Sin(\tau)\sqrt{1+Cos^2(t)\,Tan^2\left(\frac{\tau}{2}\right)}\right)\right) \equiv J \qquad (70)$$

Therefore, for Riemann manifolds of constant positive curvature $K > 1$, any Jacobi fields is a linear combination of $\dot{\gamma}(t)$, $t\dot{\gamma}(t)$, $Sin(kt)e_i(t)$, $Cos(kt)e_i(t)$ where $i > 1$ as considered in the case of a $\mathbb{R}^3$ $sphere$. Now, we have to follow Fig. 11 and replace the geodesics as closed 2D curves (the geodesics are also closed as it's over a sphere). This provides us 6 possible solutions of u on equation (68) running on one geodesic, while x on equation (69) running on the another geodesic, where these are the infinitesimal moments in time, permuted as,

$$\begin{aligned}
&A' \quad \overbrace{R^2{}_{C_1} \overset{J}{\Leftrightarrow} R^2{}_{C_2}}^{\beta_0} \quad S' \\
&A'' \quad \overbrace{R^2{}_{C_1} \overset{J}{\Leftrightarrow} R^2{}_{C_2}}^{\beta_1} \quad S'' \\
&A' \quad \overbrace{R^2{}_{C_1} \overset{J}{\Leftrightarrow} R^2{}_{C_2}}^{\beta_2} \quad A'' \\
&S' \quad \overbrace{R^2{}_{C_1} \overset{J}{\Leftrightarrow} R^2{}_{C_2}}^{\beta_3} \quad S'' \\
&A' \quad \overbrace{R^2{}_{C_1} \overset{J}{\Leftrightarrow} R^2{}_{C_2}}^{\beta_4} \quad S'' \\
&S' \quad \overbrace{R^2{}_{C_1} \overset{J}{\Leftrightarrow} R^2{}_{C_2}}^{\beta_5} \quad A'' \qquad (71)
\end{aligned}$$

Where β_i denotes the $buffer\ points$.

So, there have been 6 buffer points of 2D time through which the moment of time would flow.

2.9 Holomorphic Domain of Symmetry

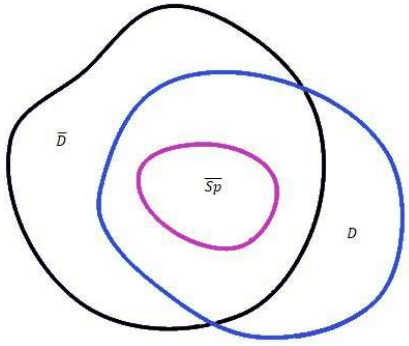

Fig. 13 Domain of Holomorphic functions

If we don't accept the 'EKPYROTIC' model or the 'Cyclic' universe model, then its quite plausible to distinguish the dimensions of time via 3 possibilities or rather phase where the phase transits like the following way,

$$\bar{D} \rightarrow \overline{Sp} \rightarrow D \qquad (72)$$

Where,

$$\bar{D} \approx Time\ before\ big\ bang$$

$$\overline{Sp} \approx Spontaneous\ symmetry\ breaking$$

$$D \approx Time\ after\ big\ bang$$

Where,

$$\bar{D} = \boldsymbol{i}D \qquad (73)$$

$$\overline{Sp} = \partial^\nu\varphi\partial_\nu\varphi - |\varphi|^4 + 10|\varphi|^2 \quad where\ \varphi = \sqrt{5}e^{i\theta}\ and\ \theta = [0,2\pi) \qquad (74)$$

$$D = \tau \qquad (75)$$

This implicitly tells us that, before big bang, the time as parameterized here as τ is purely imaginary taking a state as $\bar{D}$ while after the big bang, i.e., after the spontaneous symmetry breaking $\overline{Sp}$ the time becomes real as D. Then the obvious question that, got into our mind is that, what happened to that imaginary component $\boldsymbol{i}$ which could be well explained that, before the symmetry breaking, there has been a state of false vacuum with the potential $V(\varphi)^F$ which after the symmetry breaking transformed into $V(\varphi)^T$ which is a state of true vacuum and this symmetry has been associated with the hiding of the imaginary dimensions of time from the present reality. If the ideal time T could be explained in terms of the Phases, $\bar{D}$ and D then, the equation would look like,

$$T = D + \bar{D} \quad or, \quad T = \tau + \boldsymbol{i}\tau \qquad (76)$$

Therefore, the dimensions of time could be described as,

$$f(\eta): \mathbb{C}^n \quad with \quad n = 1 \qquad (77)$$

This is identical to,

$$\mathbb{R}^{2n}$$

Therefore, one complex dimensions of time would behave as two real dimensions of time, although being approximately equal to the embedded boundary curves. Therefore, the function, $f(\eta)$ is continuous on $\bar{D}$ where for each variable $T_\curlywedge$ in it, the holomorphicity embedded in the continuous space,

$$\frac{\partial f}{\partial T_\curlywedge} = 0 \qquad (78)$$

$$T_\curlywedge = \tau_\curlywedge + \boldsymbol{i}\tilde{\tau}_\curlywedge \qquad (79)$$

Considering the factor $f(T_1, \dots\dots, T_2) = u(\tau_1, \dots\dots, \tau_n) + \boldsymbol{i}v\left(\boldsymbol{i}(\tilde{\tau}_1, \dots\dots, \tilde{\tau}_n)\right)$, the real and imaginary parts results in the following equations,

$$Re\left(\frac{\partial f}{\partial T_\curlywedge}\right) = \frac{\partial u}{\partial \tau_\curlywedge} - \frac{\partial v}{\partial \tilde{\tau}_\curlywedge} = 0$$

$$Im\left(\frac{\partial f}{\partial T_\curlywedge}\right) = \frac{\partial u}{\partial \tilde{\tau}_\curlywedge} + \frac{\partial v}{\partial \tau_\curlywedge} = 0$$

$$\therefore \quad Re\left(\frac{\partial f}{\partial T_\curlywedge}\right) = Im\left(\frac{\partial f}{\partial T_\curlywedge}\right) \qquad (80)$$

3. Conclusion

The theory of the parallel universe has always been in the mind of theoretical physicists for a long period of time. What they missed is the evidence of that? Because, a little piece of evidence could start thousands of papers and validities the old theories, giving them a new direction for research. The cold spot is exactly this nature of a thing,

however, although parallel universe's connection is spotted by a very few scientists, but what we have found is, that, this could lead us to a new philosophy of the second dimensions of time with the concept, that time runs backward in the parallel universe. This concept of parallel universe, along with the twin universe conjecture, paves a gateway of the connection of our universe with another universe, that may be far apart in space and time now, but, at the onset, these universes must be together and they got separated employing precise fluctuations, which gives two ways of understanding the entanglement entropy relations provided the fact, the two universes are conjugated twins and separates away, moves further and further as time passes giving an impression of a single cold spot, but, there could have been another set of possibilities, that, the universes are on their way in a sinusoidal motion, and at each precise nodes, they tend to join, creating more cold spots than ever. But, why this has not happened with our universe? Maybe our universe runs on the first probability, or there are still enough times for another cold spot to appear again, which of course certainly not known, and is subject to an explanation that only can be provided in due course of time. As it has been discussed here, that the parallel universe is a symbolism of non-Gaussian structures, its also been emphasized the alternate reality that we tend to experience if there exists an entangled universe like ours. The resultant fact is the Mandela effect, déjà vu, and especially the simulated reality as proposed by different theorists. It could be the fact that there exist glitches and by-product of glitches that tends to make us feel the reasons for such confabulations which is discussed in detail in appendix 8.1. This paper is quite a hybrid paper of 2 concepts, the parallel universe, and how the parallel universe affects us, with more weight given on the parallel world philosophy. Questioning about the various possibilities of the universe has always been a key to the progress of physics and precisely, this is what we have done. We mentioned the conjugated nature of the universe, at birth, and succeeded in mathematically modeling the possibilities of their divide by the Ricci flow, singularity points and assumed a further cold spot might be possible to detect in time. To this, further interpretation has been done as to the origin of the imaginary time via a holomorphic domains with the inclusion of pre and post big bang era, as to the nature of this imaginary reality being hidden and embedded which extrapolates the need to prove the equality between the real and imaginary domains of this time separated by the symmetry breaking phase transitions from false vacuum to true vacuum rollover in the potentials $V(\varphi)$.

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7. Reference

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8. Appendix

8.1. Simulation Argument

If we believe, that some arbitrarily advanced civilizations create a simulated world, where the past, present, and future exists simultaneously, then we are forced to believe that the reality that we have been seeing including ourselves, is a by-product of such simulations and an augmented reality. This can be effectively described the equation (Bhattacharjee, 2020)[1],

$$\boldsymbol{S_{\mathcal{R}}} = Tr(\beta)^{\mathscr{M}}\big|_{\ell} \times T\boldsymbol{f}(e^{x}) \times \bigvee_{k=1}^{64}\sum_{\gamma=1}^{g_k}\mathcal{V}_{\gamma}g_k \times \sqrt{\frac{D-2}{2}} \times \bigcup_{\substack{i=1\\ j=1\\ A_{ij}\in I_{ij}\\ G_{ij}\in I_{ij}}}^{\infty} \psi_{I_{ij}}{}^{\left[a^{b^{c^{d^{***}}}}\right]}\left(\frac{1}{T^2}-\frac{1}{T^1}\right) \quad (81)$$

Here, in $Tr(\beta)^{\mathscr{M}}\big|_{\ell}$, β is the timelike or spacelike trace, with $\mathscr{M}$ as the Minkowski metric and ℓ be the margin of error in the metric while computing the simulation. $T\boldsymbol{f}(e^{x})$ is the shadow of the simulation where x can take the value of $-\infty,\ 0, +\infty$ which is flexible to move between Past to future with an exponential basis. $\bigvee_{k=1}^{64}\sum_{\gamma=1}^{g_k}\mathcal{V}_{\gamma}g_k$ denotes the Grahams number g_{64} which if taken each in 1 Plank's volume $\mathcal{V}$, then also it's enough to present the widespread computing capacity beyond the observable universe, provided this simulation has enough volume to reduce lags or glitches. This can only be provided by some advanced civilizations of Type III onwards, as because only then, the computing power would be too powerful to simulate the entire reality that we are seeing with a leftover of an immense power preventing the simulations from lagging. But, just as software glitches, performs errors, this simulation could also alter the fundamental constants of nature G, c, h in onde part of a billionth, too small, but large enough evidence to believe, we are part of an augmented reality. Here, $\sqrt{\frac{D-2}{2}}$ provides the critical dimension D_c that is 2, while the entire spacetime dimensions is 10. This forces us to believe that, the entire 10 dimensions are projected as a hologram on a 2D plane as provided by the holographic principle (Susskind, 1995)[2]. The $\bigcup_{\substack{i=1\\ j=1\\ A_{ij}\in I_{ij}\\ G_{ij}\in I_{ij}}}^{\infty} \psi_{I_{ij}}{}^{\left[a^{b^{c^{d^{***}}}}\right]}\left(\frac{1}{T^2}-\frac{1}{T^1}\right)$ in equation (81) provides us a complete matrix relations along with the time-evolving entropy from T^1 to T^2. Here ψ is a master matrix, where I_{ij} is the subset of ψ. i, j are rows and columns of the matrix subset I_{ij}. A_{ij} is the off-diagonal matrix and G_{ij} is the diagonal matrix where the glitches are present as layers along $a^{b^{c^{d^{***}}}}$ and shown as $\Im$ in the diagonals below, which is always a square matrix and keeps on increasing with time. This augmented reality could lead us to believe the Mandela effect or the déjà vu which we perceive as false memory or confabulations which can also open a possibility of parallel world connections as explained in the next section. See more (Bhattacharjee, 2020)[1].

$$a = \begin{matrix} \Im & 0 \\ 0 & \Im \end{matrix}$$

$$b = \begin{matrix} \Im & 0 & 0 \\ 0 & \Im & 0 \\ 0 & 0 & \Im \end{matrix}$$

$$c = \begin{matrix} \Im & 0 & 0 & 0 \\ 0 & \Im & 0 & 0 \\ 0 & 0 & \Im & 0 \\ 0 & 0 & 0 & \Im \end{matrix}$$

$$T\,r(+4\Im) > T\,r(+3\Im) > T\,r(+2\Im)\ for\ glitches\ in\ a^{b^{c}} \quad (82)$$

8.2. Confabulations

Parallel worlds have, had always been a source of excitation as a research topic and yield different outcomes along with logics, as developed by the researchers. It's not the case, that parallel world has been associated with physics or cosmology, as the word 'world' gives a false sense of identity called 'universe' which makes people believe, that, it's been and always been a part of physics. But, the implications and happenings of the parallel world are far more diverse and it embraces, not only physics but also psychology, psychiatry, and paranormal phenomena as related to different conspiracy theories. The philosophy of the parallel world has been incorporated in numerous books, articles, and motion pictures giving a varsity of information as to its origin. However, as this is a paper on relativistic physics with application to cosmology and topological spaces, perspectives of explanation would be from a viewpoint of physics with its associated philosophy. Throughout the paper, rigorous mathematics has been provided to explain the birth of the universe, its conjugate pairs, the separation and entanglement, with the association of R^2 being embedded in an R^3 topology, hypothesized to have the connection between our world and a parallel world. The phenomena's that cause us to believe in the existence of the parallel world are worth a discussion.

The finest such example that makes a person believe in the parallel world identity is the confabulations or the false memory. These are psychological perceptions that make a person conscious to identify anything, not to be seen before or to identify anything in a wrong perspective for an elongated period of time. Among these, the famous being the déjà vu, which makes a person thinks, that he might have present in that place before that he is currently presenting or he might have seen before the persons or the objects, but couldn't recognize how and when. This sense of false memories is truly surprising and has forced researchers from various fields, including paranormalists, for a suitable solution. Many doctors, especially psychologists or psychiatrists' delved into deep researches, whether, those sense of false memories are implanted in our genome, but they couldn't find any connections. Then they have tried to correlate the false memories with mental disorders like Schizophrenia including anxiety, depression, trauma, bipolar disorders but, again they failed, as, healthier individuals also experienced such types of delusions. This leads our duo team, to investigate the deepest secrets of nature and as nature itself becomes very stringent at its very fundamental domain, we have no option than to use philosophy with mathematics. The paper might be a bit technical, but we have tried our best to provide the non-technical explanations also for those who are new to these branches of studies. Almost 2/3rd of the healthy individuals have experienced déjà vu and we have hypothesized its connection with an intersecting, parallel timeline, where time moves in opposite directions or backward. It is hereby worth for a detailed discussion on another such false memories called 'The Mandela Effect' named after Nelson Mandela. In '2010' this false memory was described and notified to the mainstream scientific community by 'paranormal consultant' Fiona Broome, in which the false memory was associated by the death of South African anti-Apartheid leader Nelson Mandela in prison in the 1980s but, although he had died in 2013, served the presidency of South Africa from 1994 to 1999. She claimed that several thousands

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of people have come through this delusion. Later on, many such examples have been produced and cultivated and they are as follows,

- Looney Toons cartoon has been spotted falsely by many as Looney Tunes.
- The 'Berenstain Bears' has been spotted by a large mass as "Berenstein Bears', 'a' changed to 'e'.
- Curious George's tail is not there, although people have imagined him with a tail attached to his body.
- People have said to have seen the monopoly Man's Monocle but it never actually was.
- Many said to have seen the end of the famous cartoon character "Pickachu's Tail' as black, but it was always yellow.
- People said to have watched the hyphen '-'between Kit and Kat as Kit-Kat but, the famous Cadbury has no hyphen between the names. It is KitKat.
- People think that Mona Lisa is smiling but it's not properly known whether she is smiling or not and is always been a delusional effect.
- The number of states in the "United States' is 50, but many have recalled it as 51 or 52.

And many more…

However, although there are these delusions, the real reason is not known. They could be a possibility of the glitches of simulations prepared by advanced beings in the future, if we don't hesitate to believe the Bread-Slice concept of time, like past, present and future runs simultaneously with a large temporal gap in between them. They could also be a possibility of a parallel universe, however, this seems plausible that, even infinity repeats and there can be the same universe like us but just in opposite orientations at the far end of the infinity, or maybe these are caused by the entanglement among various universes. We have tried to explain our best, as far as we can, the remaining is left for readers with curious minds. The above examples of the Mandela effect which are provided here, are for a better understanding of this strange and mysterious phenomena that even science sweats to explain. Perhaps we have gone too farfetched with the detailing, but without this, it's impossible to understand such deepest secrets of the universe and we humbly attempted to do so in this paper.

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8.3. Statistical Analysis:

STATISTICAL ANALYSIS OF PROBABILITY DISTRIBITION OF 34 UNIVERSES (FROM 200 UNIVERSE IN MULTIVERSE CHAIN) STARTING WITH 2

ID	CONJUGATE COUNTS	UNIVERSE RANK		PLOTTING POSITION (Rank-0.5)/n	EXPECTED DATASET FROM NORMAL DISTRIBUTION		
1	2	200	1	0.0147058823529	-3.188294049	MEAN	18.5
2	3	200	2	0.0441176470588	1.523372093	STANDARD DEVIATION	9.95825
3	4	200	3	0.0735294117647	4.060553929		
4	5	200	4	0.1029411764706	5.903124869		
5	6	200	5	0.1323529411765	7.393196036		
6	7	200	6	0.1617647058824	8.668910761		
7	8	200	7	0.1911764705882	9.800783516		
8	9	200	8	0.2205882352941	10.83007832		
9	10	200	9	0.2500000000000	11.78326503		
10	11	200	10	0.2794117647059	12.6785103		
11	12	200	11	0.3088235294118	13.52896459		
12	13	200	12	0.3382352941176	14.34458182		
13	14	200	13	0.3676470588235	15.13320006		
14	15	200	14	0.3970588235294	15.90122239		
15	16	200	15	0.4264705882353	16.65406961		
16	17	200	16	0.4558823529412	17.39649774		
17	18	200	17	0.4852941176471	18.13283416		
18	19	200	18	0.5147058823529	18.86716584		
19	20	200	19	0.5441176470588	19.60350226		
20	21	200	20	0.5735294117647	20.34593039		
21	22	200	21	0.6029411764706	21.09877761		
22	23	200	22	0.6323529411765	21.86679994		
23	24	200	23	0.6617647058824	22.65541818		
24	25	200	24	0.6911764705882	23.47103541		
25	26	200	25	0.7205882352941	24.3214897		
26	27	200	26	0.7500000000000	25.21673497		
27	28	200	27	0.7794117647059	26.16992168		
28	29	200	28	0.8088235294118	27.19921648		
29	30	200	29	0.8382352941176	28.33108924		
30	31	200	30	0.8676470588235	29.60680396		
31	32	200	31	0.8970588235294	31.09687513		
32	33	200	32	0.9264705882353	32.93944607		
33	34	200	33	0.9558823529412	35.47662791		
34	35	200	34	0.9852941176471	40.18829405		

ANALYSIS: Computed the Mean and Standard Deviation of 35 universes among 10^{500} – 10^{20} Universes.

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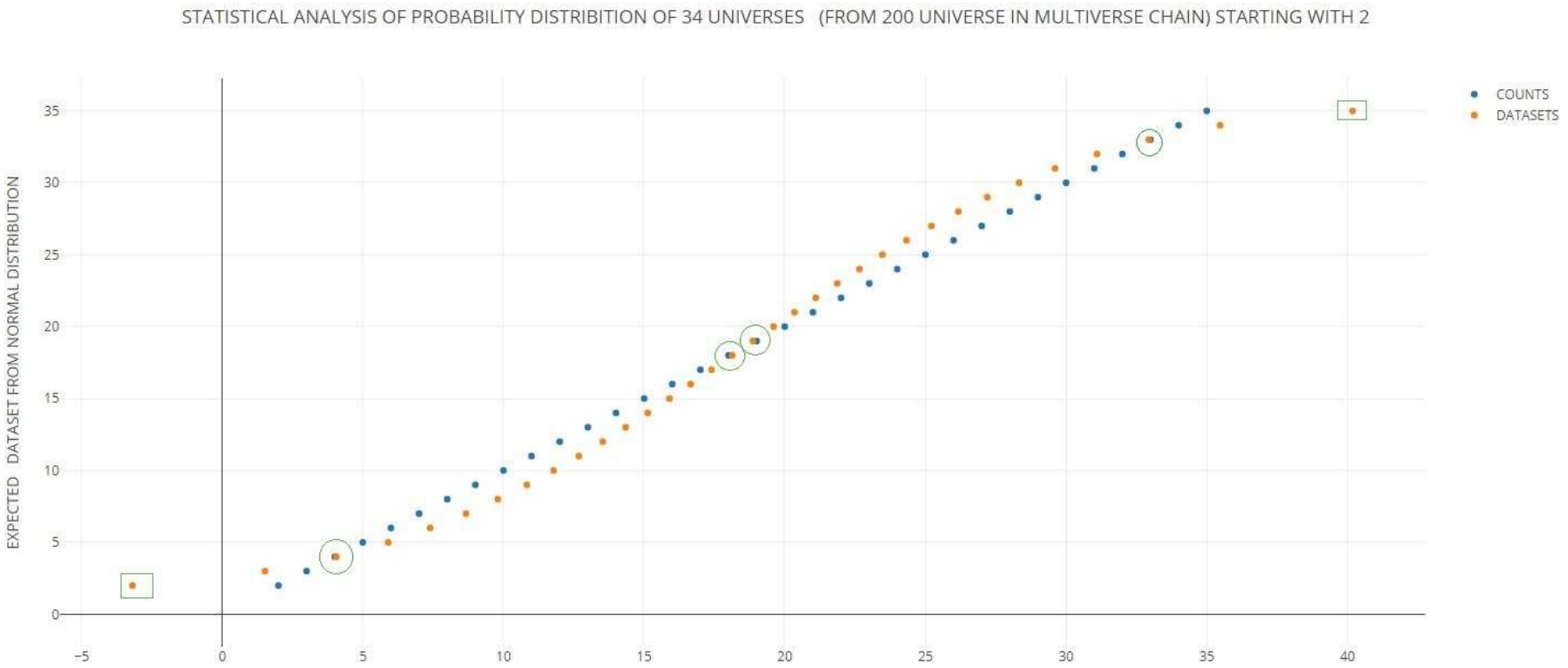

ANALYSIS: Considering an approx limit of 200 universes in the multiverse, with the conjugated identity from 2 to 35, evaluating the mean and the standard deviation, the resultant rank with the 'Normalized Probability Distribution', it shows that, when the universe is 2, the distribution yields -3 and is the only negative valued number in the whole distribution scale, which when applied to the other datasets, the resultant counts of the last universe (with respect to 35) i.e., 35th universe, it's far away from the normal distribution curve. 3 universe with conjugate counts 4, 18, 19, 33 matches with the normal distribution curve, with the 35th universe having the most probability of ~ 0.98 is far from the 'Counts" curve marked in blue. If this 200 universe is a model of the predicted upper bound of the 10^{500} universe, then, the relative probability of the first universe is negative, which simply allows the conjugate universe non-existent at count 2, while the others are perfectly existent, although being shown deviations from the normal distribution, this tends to go on like a wiggling way with 'dataset' being junctioned at 20th universe (Non-intersecting between counts and dataset) before which actual dataset is down to a normal distribution, and after which the dataset is upward to the normal distribution while the last gets separated due to the non-existent of the probability being ~ 0.98 very close to 1. This clearly shows that the probability jumps after half of the universe than the normal level, with a non-existent at the last, and undefined at the first. Circles represents perfectly conjugated points while square represents off points.

$D^{Mean} \rightarrow Junction\ Interval\ 20$ $D^{High} \rightarrow > Junction\ Interval\ 20$ $D^{Low} \rightarrow < JUnction\ Interval\ 20$ $D^{True} \rightarrow 4{,}33$ $D^{Close} \rightarrow 18{,}19$

$D\ for\ dataset\ or\ probability\ curve\ of\ normal\ distribution$ $D^{True} \rightarrow New\ Originate$ $D^{Close} \rightarrow Evolved$

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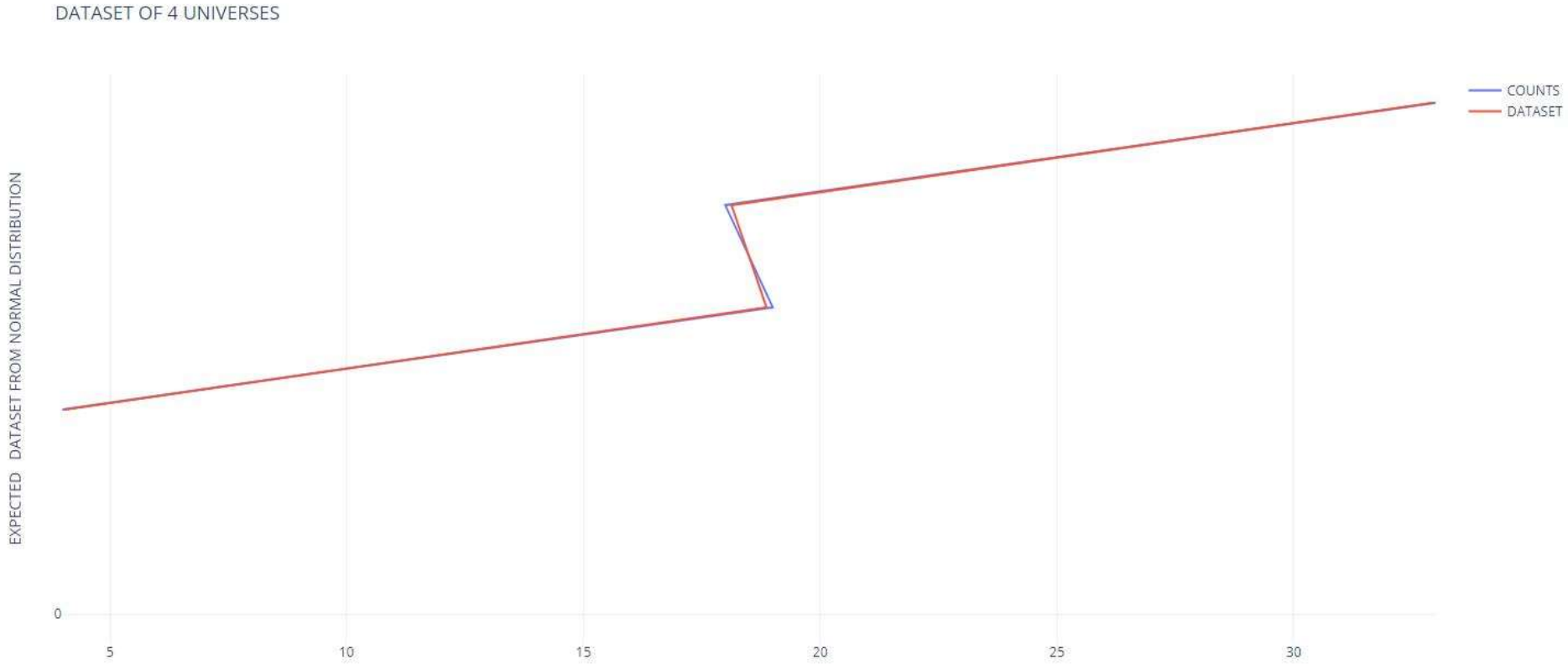
DATASET OF 4 UNIVERSES

ID	CONJUGATE COUNTS	UNIVERSE	RANK	PLOTTING POSITION (Rank-0.5)/n	EXPECTED DATASET FROM NORMAL DISTRIBUTION
3	4	200	3	0.0735294117647	4.060553929
18	19	200	18	0.5147058823529	18.86716584
17	18	200	17	0.4852941176471	18.13283416
32	33	200	32	0.9264705882353	32.93944607



ANALYSIS: 4 and 33 are newly originated universe, while 18 and 19 are evolving and have already evolved through time. 18 and 19 can be seen in between 15 to 20 with disjoint lines.

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FURTHER DETAILS ON PROBABILITY FACTORS ON 10^{480} ORDERS OF MAGNITUDE

PRESCRIBED VALUE	OPPOSED VALUE		QUOTIENT				REM				VAL			
PREDICTED VALUE	COUNTS IN MAGNITUDE BY SUMMING ALL PREVIOUS	POWERS	BY 2	BY 3	BY 4	BY 5	BY 2	By 3	BY 4	BY 5	BY 2	By 3	BY 4	BY 5
LEVEL START	10^6	6	3	2	1	1	0	0	2	1	6	6	4	5
	10^9	9	4	3	2	1	1	0	1	4	8	9	8	5
	10^15	15	7	5	3	3	1	0	3	0	14	15	12	15
	10^30	30	15	10	7	6	0	0	2	0	30	30	28	30
	10^60	60	30	20	15	12	0	0	0	0	60	60	60	60
	10^120	120	60	40	30	24	0	0	0	0	120	120	120	120
	10^240	240	120	80	60	48	0	0	0	0	240	240	240	240
LEVEL END	10^480	480	240	60	120	96	0	0	0	0	480	480	480	480

SPACE 1: Initial Level 1 Factors for Probability.

PROBABILITY				BASE PROBABILITY % (LEVEL END TO LEVEL START)				CRITICAL EXCEDENESS (LEVEL END TO LEVEL START)				MAG ENTANGLEMENT BASE 2				ENTANGLEMENT NOT POSSIBLE/EXCEDENESS 0 ELSE 1			
BY 2	By 3	BY 4	BY 5	BY 2	BY 3	BY 4	BY 5	BY 2	BY 3	BY 4	BY 5	BY 2	BY 3	BY 4	BY 5	BY 2	BY 3	BY 4	BY 5
16000	24000	48000	48000	1%	3%	1%	1%	99%	97%	99%	99%	3	3	3	2	0	0	0	1
12000	16000	24000	48000	2%	5%	2%	1%	98%	95%	98%	99%	4	4.5	4.5	4	1	0	0	1
6857.142857	9600	16000	16000	3%	8%	3%	3%	97%	92%	98%	97%	7	7.5	7.5	6	0	0	0	1
3200	4800	6857.1429	8000	6%	17%	6%	6%	94%	83%	94%	94%	15	15	15	14	0	0	0	1
1600	2400	3200	4000	13%	33%	13%	13%	88%	67%	88%	88%	30	30	30	30	1	1	1	1
800	1200	1600	2000	25%	67%	25%	25%	75%	33%	75%	75%	60	60	60	60	1	1	1	1
400	600	800	1000	50%	133%	50%	50%	50%	-33%	50%	50%	120	120	120	120	1	1	1	1
200	800	400	500	100%	100%	100%	100%	0%	0%	0%	0%	240	240	240	240	1	1	1	1

SPACE 2: Initial Level 2 Factors on Probability. $Probability = \frac{Powers\,(480)}{Consequtive\ Quotient} * 100$, $Base\ Probability = \frac{Final\ probability}{Initial\ Probability}\%$ $Critical\ Excedeness = Final\ base\ Probability - Initial\ Base\ Probability$. $Mag\ management\ Base\ 2 = Value/2$

MULTIPLE ENTANGLEMENT BETWEEN ENTANGLEMENT MAX BASE 5															
NOT DIVISIBLE BY 2				NOT DIVISIBLE BY 3				NOT DIVISIBLE BY 4				NOT DIVISIBLE BY 5			
BY 2	BY 3	BY 4	BY 5	BY 2	BY 3	BY 4	BY 5	BY 2	BY 3	BY 4	BY 5	BY 2	BY 3	BY 4	BY 5
1.5	1.5	1.5	1	1	1	1	0.6666667	0.75	0.75	0.75	0.5	0.6	0.6	0.6	0.4
2	2.25	2.25	2	1.3333333	1.5	1.5	1.3333333	1	1.125	1.125	1	0.8	0.9	0.9	0.8
3.5	3.75	3.75	3	2.3333333	2.5	2.5	2	1.75	1.875	1.875	1.5	1.4	1.5	1.5	1.2
7.5	7.5	7.5	7	5	5	5	4.6666667	3.75	3.75	3.75	3.5	3	3	3	2.8
15	15	15	15	10	10	10	10	7.5	7.5	7.5	7.5	6	6	6	6
30	30	30	30	20	20	20	20	15	15	15	15	12	12	12	12
60	60	60	60	40	40	40	40	30	30	30	30	24	24	24	24
120	120	120	120	80	80	80	80	60	60	60	60	48	48	48	48

SPACE 3:Final Level 3 Factors on Probability with Bad entries marked in Red & Good entries marked in Green. $Not\ Divisible\ by\ \#\ =\ Mag\ Management\ Base\ 2/\#\ where\ \#\ =\ 2,3,4,5.\ Fractions\ are\ devoid\ of\ any\ entanglements.$

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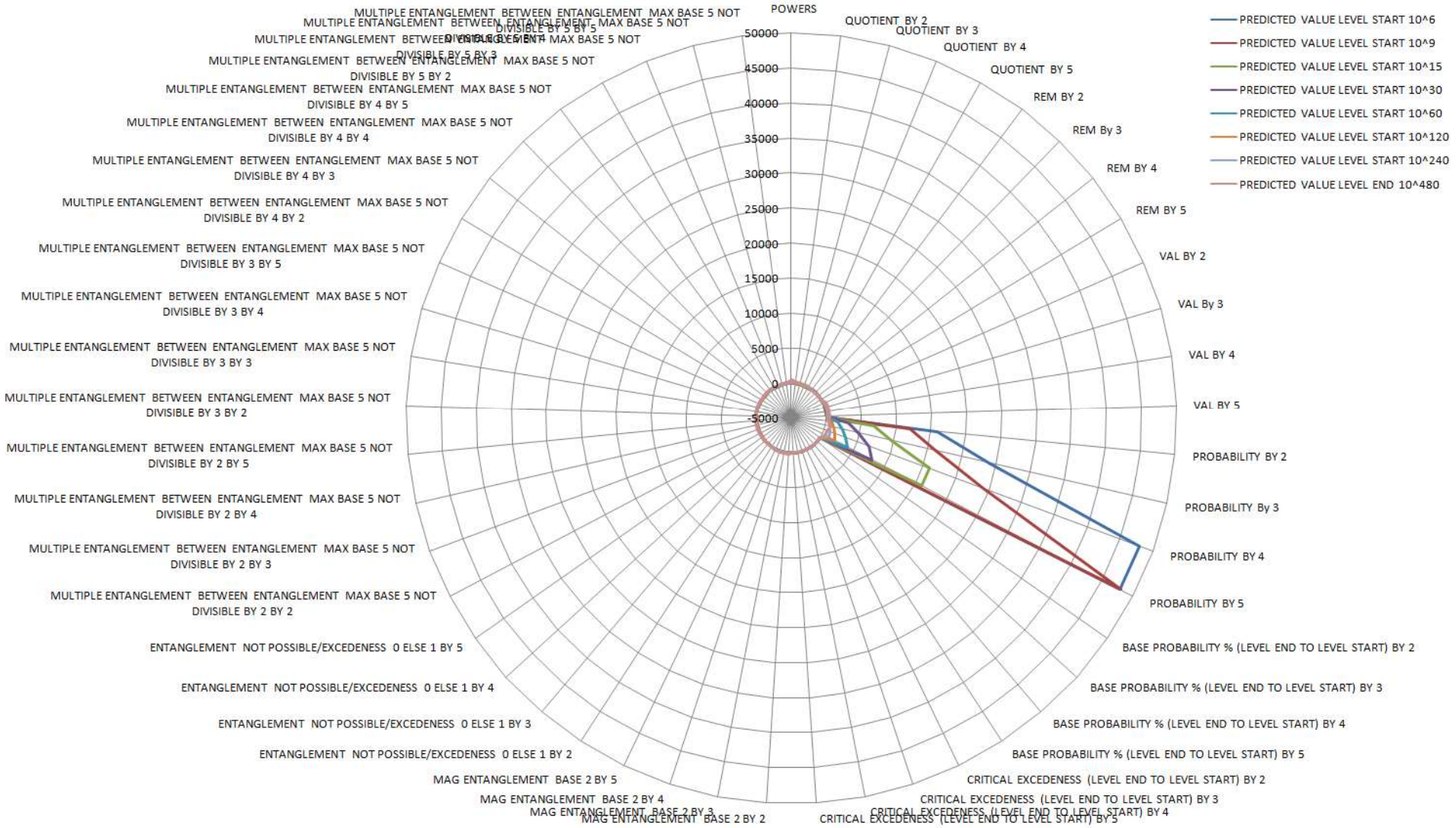

ANALYSIS: A Comprehensive representation of the multiverse along 10^{500} – 10^{20} orders of magnitude having been assembled with all the SPACE1, SPACE 2 & SPACE 3 Factors having the indicated index at the right top corner.

9. Further Reading:

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[7] Vito, S. D., Cubelli, R., & Sala, S. D. (2009). Collective *representations elicit widespread individual false memories.* Cortex, 45(5), 686-687. doi:10.1016/j.cortex.2008.08.002

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 doi:10.20944/preprints202104.0350.v1

10. Comments:

Other On-Going Projects of us:

- Towards a more discrete quantum algorithm (https://www.researchgate.net/project/Towards-a-more-discreate-quantum-algorithm) – *2 – Publications*
- Epidemiology Research Aspects in Pre/Post/Through-Pandemics (https://www.researchgate.net/project/Epidemiology-Research-Aspects-in-Pre-Post-Through-Pandemics) – *1 Publications*
- Electro-Gravitation Simulation & Propulsion Laboratory https://www.aatwrigroup.com/egsl
- UniQ http://www.aatwri.in/uniq.php

Corresponding Author Profile can be found at: https://www.aatwrigroup.com/group