Abstract

The Big Bang Theory is one of the most trusted theories for the formation of the Universe, and in the progression of the theory we forgot to ask the question “How can something exist in nothing?” Singularity which we all know is nothing but a dense curvature whereas occupies nothing space. But it does require Space although a little but it does, so before Big Bang, there was no space and no matter, then where Singularity has existed. And if there was no time before the Big Bang then was time determined inside the Singularity at that time, because singularity exploded and thermodynamics lays rules that entropy increases with time, so did time exist before Bang? We can’t answer that question with mathematics but with modern physics, also physics doesn’t allow us to trace the space-time before the big bang, then how can we answer that question.
1 Introduction

It is well known between physicists as well as the common audiences that Universe was begun after the Big Bang [1]. The Big Bang Theory is widely accepted due to its flexibility to define the universe that we see today. But we don’t know anything about the situation and physics principle before the bang, because Physics doesn’t allow us to trace those events. But I think we can question one question that is connected with the situation before Bang but can be answered with today’s logic and physics principles.

It is also well known that Big Bang was succeeded by Singularity, which has become one of the most viable theories of all time. Schwarzschild was the first person to recognize this singularity and later it was named Black Holes, he also proved that Black Holes cum Singularity have surface although negligible when compare to another corporeal universe. But we will account Kerr Metric [2] here:

\[
g = -c d\tau^2 = -\left(\frac{1 - r_s r}{\Sigma}\right)c^2 dt^2 + \frac{\Sigma}{\Delta} + \Sigma d\theta^2 + (r^2 + a^2 + \frac{r_s r a^2}{\Sigma}) \sin^2 \theta d\phi^2 - \frac{2r_s r a \sin^2 \theta}{\Sigma} c d\tau d\phi
\]

Where

\[
x = \sqrt{r^2 + a^2 \sin^2 \theta \cos \phi}
\]

\[
y = \sqrt{r^2 + a^2 \sin^2 \theta \sin \phi}
\]

\[
z = r \cos \theta
\]

Recently Black Hole has become a famous physics object due to its fiction type concept. We all know that before the Universe there was no time and space only a singularity [3]. By this theory, we can claim that before the bang there was not a single physics matter or energy. But climax comes when we see Singularity in the null universe, you can say that Singularity is nothing, then how can something come from nothing and this clearly violated one of the most precious theories of conservation of mass and energy by creating mass and energy from nothing. After Hawking we have seen Singularities radiate energy, then did our singularity ever radiated energy and if yes then to which space? And then the question comes how singularity can even exist in the null area?

Secondly, we all know Singularity exploded and it depends on common sense that it would explode after some time from its birth. It is clear that time was going in singularity but it contradicts the modern theory of Big Bang. So the question comes that did time exist before the bang and do we have to look at another theory to explain the bang nature of the universe.
2 Null Universe

The word Null universe seems so exciting and fuzzy because null means nothing and how can universe consider as nothing?

But The Big Bang Theory (TBBT), predicts that before the explosion universe was actually nothing just a mere proceeder of time and space. And the truth is that our modern physics can’t even define one second before the big bang and that is because we can’t determine the weight of baby before its birth (Spoiler Alert: It can be possible with technology). However, we can trace any event with the help of Cosmic Microwave Background Radiation [4] and it is possible to predict nature till the singularity in backward time. And comparing two distinct universes which are now and one before the bang yields a vast amount of differences. Multiverse theory stands by that statement. So thinking about that situation before the bang is nothing but nonsense with current physics.

But a lot of Physics, as well as Philosophical statements, make space and time a priori, the best example of that is Transcendental Philosophy. If Space is priori it doesn’t need any experience, then we can say the situation before the bang and after the bang would have same space principles.

\[
d s^2 = d x^2 + d y^2 + d z^2 - c^2 d t^2
\] (5)

Eq. 5 is a famous equation for space metric, knowns as Minkowski’s Four Dimensional World.

\[
\begin{pmatrix}
1 & 0 & 0 & 0 \\
0 & 1 & 0 & 0 \\
0 & 0 & 1 & 0 \\
0 & 0 & 0 & -1
\end{pmatrix}
\] (6)

Here we can see that Space and Time are coupled no matter how strong. If the universe banged, then before the bang it must be preparing for the bang. The null universe can get from Eq 5 but that time space and time wouldn’t have coupled. So before the bang, there can be two situations:

(1) Space and Time existed alone, they were universal.
(2) Singularity existed in Space and Time was going inside the Singularity. It is very awkward to mention but the second statement says that any Universe expands in initial and then contract by decoupling Space-Time, converts into a singularity which then bangs to create another universe.

A similar model has been introduced where it has shown that our universe will also turn to a singularity. And modern physics states Conservation of Energy and Mass a priori principle, so the key concept is that There is a clear view of Conservation of Universe. It is very tricky to answer that of course and for sure the today’s matter and energy will slowly begin to be used to make a singularity and then that energy of today will be used to create a brand new universe. It is will be nonsense to quote that we will be present in that universe, but it all depends on those situations like our situation which made the earth a beautiful place.
3 Conservation of Universe

Like its section name, this topic is so much interesting and probably the newest. You must know the conservation of mass and energy. But the principle in the area of the beginning of the universe and death of the universe is so much complicated, but let’s make it a simple one. Imagine a universe after the bang, due to Hubble’s Law \[5\], that universe must be expanding and after some time cosmological constant \[6\] which is dark energy is going to be completely used after that Gravitation will take the charge of control and lead to contraction of universe, it will lead to a singularity, that singularity will be aftermath of energy and matter getting coupled, and when that singularity will explode, the matter and energy from the previous universe that coincided in deep curvature of singularity will get back into the new universe and the process will continue on and on.

That is **Conservation Principle for Corporeal Universe**. And it is kind of interesting to figure out that when and which was the first universe, which is almost impossible because when one universe contracts to a gravitational singularity, it doesn’t leave any residue to even get know about after all did that universe existed at all? Light cones \[7\] from that universe is like impossible to be traced. These principles have some fences and ferries to be over jumped. As tracing things that we can’t imagine is impossible, we have to keep that simple by extracting a regular singularity to a universe. This model is supportable by many theories, like Multi-Verse, Cosmological Constant and many more. Our model is like most flexible to be imagined if we support the **Big Crunch Theory**. The Big Crunch Theory is a contrast of TBBT, this theory idealizes that universe at last contracts to a single point. And the same is told by our model. I would like to call it **Big Conserve Model** for Universe because we are dealing with the magic of transitions between past, present and future universe.

\[
g = -cd\tau^2 = -\left(\frac{1 - r_s r}{\Sigma}\right)c^2 dt^2 + \frac{\Sigma}{\Delta} d\theta^2 + \left(r^2 + a^2 + \frac{r_s r a^2}{\Sigma}\right)\sin^2 \theta d\phi^2 - \frac{2r_s r \sin^2 \theta}{\Sigma} c dt d\phi
\]

The irony lies when Kerr Metric \[1\] slowly changes to regular Minkowski’s Four-Dimensional World \[2\], this transition is supported by dense curvature of Kerr Metric which slowly converts into too low curvature and flat space. Cosmological Constant plays a part in the transition and we can call this transition inflation \[13\]. Hubble’s Law \[5\] which proclaims that now our universe is expanding which is solely backing this model, which is

\[
v = H_0 D
\]

where \(V\) is the recessional velocity, typically expressed in km/s, \(H\) is Hubble Constant and \(D\) is proper distance. Eternal inflation also influenced by the factor of Quantum Fluctuations, those regions where this fluctuation is high expands fast and dominates the universe. This the basic principle for inflation after one singularity converts into a fully well-developed universe. The official metric for a regular universe after such fast inflation is for sure the famous
Friedmann–Lemaître–Robertson–Walker metric (FLRW),
\[ c^2 d\tau^2 = -c^2 dt^2 + a(t)^2 d\Sigma^2 \] (8)
The Friedmann–Lemaître–Robertson–Walker (FLRW) metric [16] is an exact solution of Einstein’s field equations of general relativity; it describes a homogeneous, isotropic, expanding (or otherwise, contracting) universe that is path-connected but not necessarily simply connected.
And when deceleration factor \((q)\) is negative and the scale factor is the second derivative of scale factor [8] is positive we get a contracting universe which is an essential fact for this model. Deceleration factor is defined by:
\[ q = \frac{-\ddot{a}a}{\dot{a}^2} \] (9)
There are many factors that are responsible for the negative value of \(q\) and factors are not dependent on the previous version of that same universe. Each universe has its own fluctuations scales and factors for \(q\) to be negative. In our universe, it can be a small amount of cosmological constant and dark matter, and in this case, our universe will start contract due to the efficiency of gravity and leads to the singularity. And the process again continues to form another universe using the Conservation Principle of Corporeal Universe, leading to Big Conserve Model. And it impossible to know which was the first universe and when it was created is like asking for who was the first man on the earth.

4 Singularity and Time Importance for Conservation
As we have laid this model on the basis of singularity and time, but the general question stands in the queue that why the universe needs to conserve and what time plays the role in the conserve principle, and also the validity of this model. Quoting Transcendental Philosophy, Space and Time are priori, that’s mean we can backward space and time, we could get a decouple of space-time to space and time where space and time become absolute. Time is known for its existence and what if we remove the time from all areas and dimensions, we just left with matter and energy being stopped. And exactly this was the condition before the singularity of the universe, the universe was stopped till the bang. But the universe had its remaining dimensions i.e space. But if time was never there, then how time later coupled with space to form space-time. Answer to this question relies in singularity, as we know from the basic thermodynamics principles [9] that entropy [10] increases with time and singularity exploded then it must have very high entropy at the time of explosion, although it could be turned down to low entropy, but matter of fact if it had high entropy there must be some secret time dimensions and space dimensions also. As time goes inside the singularity that doesn’t mean that there were clocks ticking but it could be possible that time was been used for just entropy purposes and because light cones inside singularity don’t travel much, time would have to go back-forth just till bang. After the bang time dimensions could have coupled with space dimensions that we know today. Then where those hidden space dimensions have gone?
This is tricky and nowadays physicist quotes them hidden dimensions \[11\] that are the keys for the secret behind string theory \[12\]. So it can be possible that there must be some pseudo dimensions that haven’t coupled with their mate dimensions. The analogy to the previous statement, space and time were pseudo until they coupled to form space-time. And there must be some more pseudo dimensions that didn’t get to that result. And now it seems to be good to question the basic question “How can something exists in nothing”, although we have reached the conclusions, it is so effective. Mathematical results for those statements are not easy to crack as we are dealing with the universe before the bang and more effectively the transition of the universe before the bang. Going deeper we get to know that coupling of space and time was not just a mere luck every other universe must have this coupled space-time property to be called a universe. And the coupling of pseudo dimensions is totally dependent on the fluctuations of the current universe and independent of properties of the previous universe. So time and space and all the other dimensions don’t bear after the bang but are itself contained in the mere presence of the universe. And that totally contradicts the thinking of today’s physicists that space and time and all other things didn’t create before the bang. And what I think that we have to question the Big Bang again.

Space and Time are known for their flexibility to provide references and transformations. But can alone space can give a reference, yes, then there must be a reference in the transition period but it is then impossible to define the event during the transition period. And it can be said that the first event in any universe is the bang. Although just after the bang coupling of space-time happens, but at the time-space and time are unknown for each other, but the event of big bang happens in the presence of space and time hence it can be defined as an event. Let’s talk about transformation now,

\[
x' = (x - vt)\gamma \\
y' = y \\
z' = z \\
t' = \left(t - \frac{vx}{c^2}\right)\gamma
\]

This set of equations is known as Lorentz Transformation \[15\], first emphasized by Albert Einstein to derive the relativity. So during the cosmological transition, the chances for Lorentz transformation are null, so the period of transition is so complex that having two bodies and referring them is so impossible.

5 Collapsing

A lot about Bang, let’s now discuss the collapse of the universe. As I mentioned above the universe collapse in order to create a new universe, but the question is collapse necessary, it can continue its present form. Yes, but conservation is necessary to balance the universe. There are many collapsing theories, but I prefer the Schrödinger-Newton De Sitter Universe. It emphasizes the whole world into wave packets and then those wave packets
collided within its gravitational field, with an initial width of 75 meters.

\[ i\hbar \frac{\partial \psi(r, t)}{\partial t} = \left( -\frac{\hbar^2}{2m} \nabla + m\phi(r, t) \right) \psi(r, t) \]  

(14)

Where,

\[ \phi(\vec{r}, t) = -Gm \int \frac{\psi(r', t) \, d^3\vec{r}'}{r - r'} + \frac{\Lambda c^2}{4\pi} \int \frac{1}{r - r'} \, d^3\vec{r}' \]  

(15)

Eq. (14) is known as Schrödinger-Newton De Sitter Equation [14], and normally criticized for its flexibility. But the theory relies on the foundation of wave packet, an initial wave width with 75 have two chances, the first is the faster than quantum spread of the wave function and the second combines gravitation collapse of the inner core of the wave packet, close to the center of mass, with the accelerated spread of the outer shell, lying outside a given critical radius. Here the initial state is chosen to be a three dimensional spherically symmetric Gaussian Wave Function:

\[ \psi(r, 0) = \frac{\alpha^{\frac{3}{2}}}{\pi} e^{-\frac{r^2}{\alpha}} \]  

(16)

We have more theory related to collapse theory, but the core conclusion from all that is that when \( \Lambda \) is less found in universe then the universe have not options beside collapsing down to a singularity and after that, you know what is going to be happen with this model.

6 Tracing Out the First Universe

Tracing out the first universe is not possible, after all we can’t extract the informations about our previous universe. But if we consider the whole universe as a wave function and cosmological transition a potential barrier where wave function got crunched towards its mass as we have seen in the SN approach, and after that barrier we get a new wave function with the same energy and matter, but with different structure due to the phase shift and variable parameters, if we can know the range of wave function we call easily call out the first universe. After the potential barrier shift, Scattered Information Situation [18] breaks apart the universe into singularity or singularities, hence we can say one universe can produce thousands of multi verse. Levinson Theorem takes care of conservation of energy,

\[ N = \frac{1}{\pi} (\delta(0) - \delta(\infty)) \]  

(17)

and we can say that we live in the universe of wave function whose parents was the first wave function originated at the time of the initial range. But as the wave function touches potential barrier, the information of the parent wave function got distorted into little few pieces which contain those information, hence we can say that our universe have some encoded information about the first universe. Scattered Information Situation is so crucial, and hard to restore information as it have broken down into pieces, and this same theory applies to the Black Hole Singularity.
7 Validity of The Model

We have discussed our core ideas, but what are the validity of our model and how much it respect the current modern theories of physics. As we have laid our ideas on the basis of Conservation. Let’s first of all crush the conclusion from conservation idea. Here conservation not only mean change in forms, but the transition from a old contracting universe to a new expanding universe. Let’s make it more decent by explaining it with the fundamentals of Quantum Theory. The whole model has been made on the foundations of Quantum Theory of Physics. We are taking universe as a wave function, singularities as potential barriers, multi-verse as scattered information of first universe and after all the conservation principle of energy and matter. We are safe here. Moving to next i.e String Theory, as the physicists are trying to prove string theory in order to understand the true nature of universe, they are lacking something and that is dimensions. But we have seen that hidden dimensions are available in our universe but not in coupled way that make it impossible to visualize it. When we go to Einstein Field Equations \[ R_{\mu\nu} - \frac{1}{2} R g_{\mu\nu} + \Lambda g_{\mu\nu} = \frac{8\pi G}{c^4} T_{\mu\nu} \] (18)

and our model is itself a solution of Einstein field equation but it is done by the compilation of FLRW, Minkowski’s, Kerr. This was because one unique model can’t be prescribed to transition period but can to singularity. This model also opens a new way for the Metaphysics, there is a strong message from this model that multi verse exists. But not like that which is formulated by many other models, but it says there can’t be any similarity between any distinct universes, all factors of a universe depends on the current fluctuations and luck.

8 Conclusions

Let’s now finally crunch all the principles and calculation done above. So first we laid the questions which were so basic like, how can something exists in nothing, and how singularity exploded with time. Main answers are that Singularity and time are just a process of transition period of cosmological creation of universe. Singularity is encoded with time and few hidden dimensions and that time all three dimensions of space provide a stay for singularity. And we get that, all this happens due to conservation principle of universe, this principle is that each universe expands and collapse, then reach at the potential barrier giving rise to multi verse, all this because of scattering principle of singularity. This also holds the key for hidden dimensions, space and time gets easily coupled because of the relative nature of universe, but other hidden dimensions usually don’t couple, and totally depends on the universe fluctuations. The we get that universe is just a mere presentation of wave function going from one limit the bang to the final limit the crunch, where it got divides into many more universe, all this because the energy and matter conserve in order to born those universe, and we are living in one of those universe. So it’s nothing bad to say that there are major copies of universe right there. Principle of Physics can’t be same in all the universe, it
depends on the quantum fluctuation of distinct universes. Tracing out first universe is not possible though, because we don’t know the limit of the universe and again asking the first universe and how it created is just like asking when and who first born, but not mythically. The we set that our universe will also collapse when our dark energy fuel gets decrease and deceleration factor becomes positive and scalar factor negative. And the our universe is also going to produce some multi verse by using present energy and matter. And all the universe have common ancestor, which is so hard to find with the present physics and philosophies.
References


