

Something More Fundamental Than Time And Cyclic Nature Of Universe

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(This research paper uses two Ramanujan's Summation series by Late Sir S. Ramanujan and a single idea from General Relativity, by Late Sir. A. Einstein and further all results, predictions and possibilities deprived are my original work.)

Abstract : This paper is about understanding a some mathematical series - Ramanujan's Summation by Sir Srinivasa Ramanujan (The divine Mathematician) which tells us about some nature/features of universe, space - time, and also points towards Multiverse theory, at What the time of big bang?, visualization of infinity, What will happen after the end of time?, time not being fundamental and Why universe behaves in cyclic manner?

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I. Introduction :

Time not being fundamental :-

One of the most thinkable question is **“What let every entity to know that, what and how it has to do that ?”**

“IT FROM bit” This phrase, coined by physicist Sir John Wheeler, encapsulates what a lot of physicist have come to believe: that tangible physical reality, the “it” is ultimately made from information, or bits.

Concepts such as entropy in the thermodynamics, a measure of disorder whose irresistible rise seems to characterize our universe, have long been known to be connected with information. More recently some efforts to unify general relativity, the theory that describes space and time, with quantum mechanics, the theory that describes particles and matter, have homed in on information as a common language.

But what is this information? Is it “ontological” – a real thing from which space time and matter emerges, just as atoms emerges from elementary particles? Or is it “epistemic” - something that just represents our state of knowledge about reality?

Cosmologist Paul Davies argues in the book “Information and the nature of reality” that information occupies the ontological basement. In other words it is not about something, it is itself something. And I too believe on the ontological basement.

So, According to me, What's important here is, **Is it just information alone which is fundamental, or much more?**

To understand this, let's refer to the natural process which happens in universe and in computer systems too, which is :-

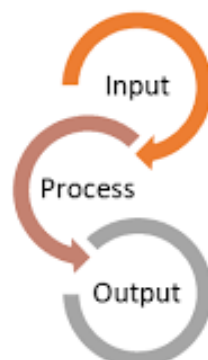


FIG. 1.

So, following this procedure Information must fall in the INPUT category, then the particles analyses these inputs and functions as coded.

So, the point here is, suppose we are doing coding on computer for a specific thing, the basic needs are :-

- (1) We bring the information to code.
- (2) We make a way in our mind, How to do it ?
- (3) We use appropriate functions of coding as required to maintain the sequence.
- (4) And finally we decide where must be the output be ?

One more example to make things visible :-

Suppose we are using a calculator, The steps to perform a single function are :-

- (1) We use the numbers given to calculate.
 - (2) We make use of initial operators very definely, for example, if we are calculation $5+1*4$, so we will obtain a result equal to 24, but when written like this $5+(1*4)$, then we will yield a result of 9.
 - (3) Then we will use the final operator equal to “=” to tend the computations to happen.
 - (4) And then we assign where the result should lie. For example, some calculators show results in fraction form and some in decimal form. (Right now, decimal form calculators are mostly used.)
- Now, things must have become very clear that **Information is not alone fundamentally**, the other aspects which lie fundamentally lie with information are :-

Information > Art > Sequence > Destiny

Information refers to What particles or something has to behave ?,

Art refers to How particles or something has to do it ?,

Sequence tends the particles or something to go accordingly with the information, And

Destiny controls the particle or something to where they have to reach ?.

So, these things are the fundamentals of what we know fundamental are right now i.e., these itself are fundamental and answers appropriately our above question “**What let every entity to know that, what and how it has to do that ?**”

Functioning Of Universe :

As we know the one of the Ramanujan’s summation

$$0 + 1 + 2 + 3 + 4 + \dots = - 1/12$$

Numbers are the physical representation of the nature of how things are going on. Mathematics is the way how nature communicates with us and the series and equations of mathematics acts as bridge between Maths and Physics.

If the universe is a computer then all these numerical series and equations are the algorithms of the system. So all the physical quantities must be behaving according to these algorithms and actually they all are. For example the Maxwell’s equation of electromagnetism and wave, equations of relativity, Schrodinger’s equation, all holds true for the nature.

Now let’s suppose the time is moving like this (The above summation) , it’s starts from zero and goes to infinity.

But if we observe the series, we know that on a number line (let’s talk on the X axis for the sake of simplicity) if we add numbers from the positive side of any axis to the numbers of the same positive axis, we are going to get a number far away on the same axis to the right, like this :

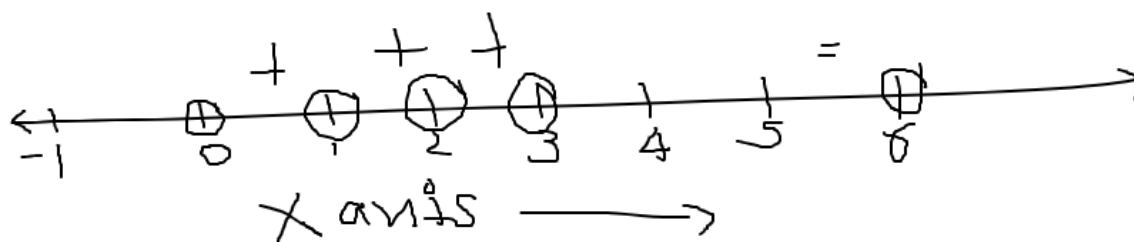


FIG. 2.

But after visualizing the Ramanujan's Summation, we get to that if we keep on adding these we are going to get a number on the negative side, it's something like this :

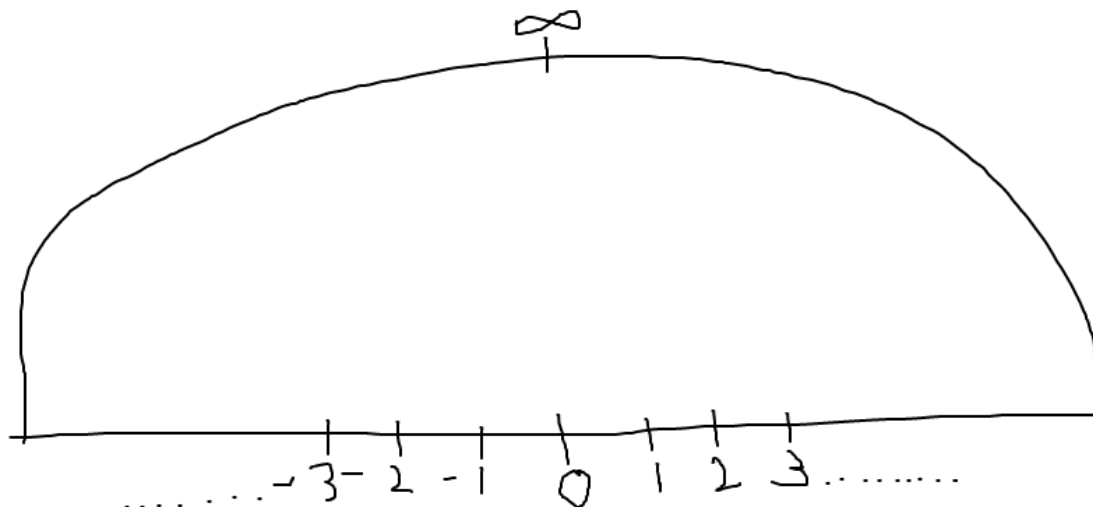


FIG. 3.

This is showing that at the beginning, numbers go as they were going but after reaching a particular value, it tends to move towards the negative side resulting in the number line to look like this as in the above picture. This is because we are getting a negative value of $-1/12$. Now this Cartesian contains no more arrows which were showing that number moves forever like that in the FIG. 1.

Let's understand this with one more Ramanujan's series to get a clear visual picture, which is :

$$1 + 2^{2k} + 3^{2k} + 4^{2k} + \dots = 0$$

Now, let's put $k=0$, so we will get :-

$$1 + 2^{(2)(0)} + 3^{(2)(0)} + 4^{(2)(0)} + \dots = 0$$

Which will be equal to,

$$1 + 1 + 1 + 1 + \dots = 0$$

Which shows that even if we start adding the numbers one by one, we are going to reach where we started just like in the FIG. 2.

Now, if almost everything we see in the observable natural universe seems somewhat ellipsical like our shape of earth, and other planets, shape of our solar system, shape of our galaxy, shape of our universe, etc., then why can't these algorithms be !

Observing this algorithm with time and fate of universe

Now let's define the movement of time with the help of this algorithm, these algorithms present the nature of movements of physical quantities, and time is also a physical quantity.

So, this physical quantity called time must also be moving like these scenarios of curved Cartesian plane.

And if we observe the algorithm closely, we will observe that time started at point zero (0) and moved till it reaches infinity and after **that there are two possibilities :-**

1st Possibility - Time will get reversed, universe will start collapsing until it reaches to big bang again, and every event, every moment which has already been done are going to happen in a reverse manner, unless time moved around and again reaches at 0 after reaching zero, it will not stop, it will continue to do the same events and moments which it was doing after crossing infinity in a reverse manner will happen again in ascending order in an eternal same path cycle.

2nd Possibility - After crossing infinity, i.e., while the time is travelling from infinity and again to zero in the negative direction of the FIG. 2. (left hand side), the preparation of the next cyclic universe has begun which means arising of new big bang for the next universe.

The 1st possibility which I mentioned above really seems non practical and less logical , but still we can't say anything , it may happen.

But , considering the 2nd scenario , According to me after when the time crosses infinity our universe will stop expanding and finally die out. And the new big bang will begin and will freak out after the time has travelled from the infinity to zero (0) on the negative path, and again new universe starts from the zero and onward to the positive direction.

This idea also supports What Einstein's general relativity indicates that space-time is finite but has no boundaries, it's like that a person is running in a circle which starts from initial point zero (0) goes halfway and while running for the next halfway he is getting prepared for the other next halfway. This is really interesting , we are referring here the man who is running with time , this shows the nature of time , but the question which arises is

"How Time knows that from after crossing infinity it has to behave that way?" , Actually we can ask this question for every entity in the universe , which is "How it knows , it has to do this?"

This question is already answered in the first section of paper . **But it really indicates that there's something more fundamental than time – space** , which is causing the time to move that way. I can illustrate this as a person who is instructing him to run halfway and get prepared on the next halfway to run for the next halfway.

What will happen after time has crossed infinity and is travelling through the left hand side of FIG. 2. ?

So, till time had reached infinity everything in our present universe has ended , the universe had died up , Now , when time crossed infinity the process of new big bang has already begun , **The size of the next big bang is equal to the size of our present universe which has expanded till infinity with a accelerating rate** , which means the size of big bang of the next universe will be far even larger than the size of universe right now have when you are reading this paper. Now , what will eventually happen at the beginning of the next big bang will be is , all the pure photonic radiation raised from the evaporation of the mighty super massive black hole , after crossing the infinity will eventually get combined with the fundamental particles of the next universe and will form the first state of matter of the next universe which is most probably a fluid (plasma) , (as in our universe too , the first state of matter was like an ocean of perfect liquid , which was identified by smashing lead particles at 99.9999991 percent the speed of light as reported online on May 11, 2021 in the journal Physics Letter B by the latest batch of Neil Bohr Institute , University of Copenhagen in Denmark) and which will also help the big bang size to grow (it will only grow in size , will not explode till now) due to spatial absorption , and when the big bang has absorbed that first fluid of the next universe completely , it will explode and the era of new universe begins. And of course the size of the next universe will be far larger than our imagination , but the thing which will be same is **Mass will be conserved.**

So for now , a new journey of time begins, a new big bang happens, a new universe begins, So, now a new question arises **Is the man running on the circular track (previous example) is still running on the same track or on a different one? Means will time go cyclically same or cyclically looped ? Then there are two possibilities : -**

1st Possibility - Suppose time is going cyclically same , so every same celestial bodies, same stuffs, same everything is going to born again, every same events is going to happen again with the same person which has already happened in the extreme past. Considering this scenario, if this all was supposed to happen again, with the same individualities, there was no point in destruction of previous universe. But still it's a possibility.

2nd Possibility - Now, considering the next scenario in which time will run cyclically looped is most probably be the case, where every bodies will born again, every same event which has happened already will happen again but with different individuals because the previous ones had already played their part, here individuals refers to all the living and non living entities, for example : in the next universe an earth like planet will be there , history will repeat events but with different individuals , not exactly me , but the one like me will be writing the same paper in different representative way , as may be they do not discover numbers , but a different thing , which in our universe is pointing to , this cycle will repeat till eternity.

The only thing which will never end is this cycle. Until and unless we proved that GOD exists and he does something to end this cycle.

Relation with Multiverse :

“According to the eternal inflation theory introduced by Paul Steinhardt and Alexander Vilenkin which predicts that our universe is a part of multiverse. This vast structure is made up of an infinite number of universes, each of which can spawn an infinite number of daughter universes.”

“And the further researcher exclaimed that the problem with the multiverse is that anything that can happen will happen infinite number of times, and that makes calculating probabilities – such as the odds that Earth size planets are common - seemingly impossible.”

But as we discussed above cyclically looped scenario where every event will happen once again but with different individuals, and this will continue forever which clearly explains that there must be thousands of previous universes before ours which clearly shows that our universe is a daughter universe. And this cyclically looped theory also tells us that these events which has happened/ happening/ will happen, are going to happen infinity number of times. And these all things happens because **nature of universe is cyclical.**

Now, there are still some questions which are unanswered:

Q.1 : When and how did this cycle begin? Or do we really have a creator?

Q. 2: What calamity can stop these cycles ?

Q. 3: Can this cyclical quality of universe can also be related to parallel world?

As Multiverse refers to the same events happening with different individuals and parallel world refers to the different probabilities of events getting done by same individual in parallel universe, so the only thing we can conclude right now is if in case parallel worlds existed along with multiverses, then those parallel worlds would also be cyclical.

Short with no explanation prediction related to particle physics :-

1st Prediction - Currently, we are aware of two type of elementary particles, fermions (which contains quarks and leptons being distributed in three generations) and bosons (force carriers). But, According to me, two more types of elementary particles should exist, one for dark matter, which some scientists say are axions and WIMPS and some portions are constituted by hardons. And the second one is which constitutes the time.

2nd Prediction - According to me, time is a product of two types elementary particle, one from which dark matter constitutes and another which is the main particle of time which is yet to be discovered as I mentioned above.

Note :- These are just imaginable predictions which I firmly believe are true and will definitely explain in future.

Reason for Why Universe is cyclic ? And when this cyclic nature may possibly end ?

By all the circumstances we have seen and observed till now, we can conclude that universe itself is trying to balance things out and to form a shape which seems perfect, as we last discussed the destiny scenario where universe has been fundamentally coded to reach a destiny where it attains a perfect shape and only then this cycle may possibly stop.

II. Conclusion :

- (1) Universe is cyclical, it will end and start again with same events happening with different bodies.
- (2) Possibility of collapsing universe.
- (3) Possibility of the size of the next initial stage of big bang will be the final size of our universe but the final size of next big bang will be even more larger than our universe, and the next universe will be far more larger than our imagination.
- (4) Multiverse do exist as the nature of universe is cyclical. Means there existed a parent universe before and this is the baby universe and thousands of universes will be born.
- (5) Possibility of presence of four types of elementary particles in all.
- (6) Possibility of particles which constitutes the time.
- (7) Information > Art > Sequence > Destiny are even more fundamental than space – time.
- (8) Universe is fundamentally coded to reach a destiny to attain a perfect shape.

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