



Particles of un manifested supreme space before the big bang

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Abstract: The Un Manifested Supreme Space (UMSS) is holding our Manifested Physical Space. (MPS) There are infinity of singularity particles in UMSS. Two or three of the singularity particles of UMSS collided and this is the big bang. Both time and space were created at this event. Also, the universe started to expand right from the collision of singularity particles. All the singularity particles and the manifested universes are all in elliptical motion in the UMSS. When one or more a singularity particles come very closer to the manifested space, the end of the manifested space occurs. i.e the singularity particles of the UMSS) will either swallow or torn apart the manifested physical spaces. This is the origin and end of manifested physical spaces in the UMSS.

[S. Kalimuthu. **Particles of un manifested supreme space before the big bang.** *J Am Sci* 2020;16(11):31-41].
ISSN 1545-1003 (print); ISSN 2375-7264 (online). <http://www.jofamericanscience.org>. 4.
doi:[10.7537/marsjas161120.04](https://doi.org/10.7537/marsjas161120.04).

Key words: Particles of pre big bang, big bang, CCC, a new cosmological model.

PACS: 98.80.Bp, 98.80.Es, 98.80.Qc, 04.20.-q, 04.60.-m, 04.60.Pp

A brief introduction

Oxford mathematical physicist and theorist sir Roger Penrose published a book in 2010 titled —Cycles of Time: An Extra Ordinary View of the Universel. This book deals with the physical theory of the big bang. It is the least radical departure from standard physical theory, to describe the big bang. It changes the metric theory of the general relativity into conformal geometry theory. It predicts the cyclic repeat of a process in about 10100 years a sequence of aeons. Penrose starts with Weyl curvature, Weyl hypothesis, Freedman-Lemaitre-Robertson- Walker metric (FLRW) and the concepts of conformal geometry which is a sub field of Riemannian geometry [7].

After thoroughly analyzing Penrose's pre big bang phenomena, Kalimuthu proposed an entirely new and peculiar type of pre big bang physics. Kalimuthu rejects most of the concepts of Penrose. After receiving the breakthrough fundamental physics prize, Namim Arkhani asked the physic community to change the concepts of space and time. This is one of the major inspirations for me. In his new model of the universe, he proposed that our space-time is physically manifested space (PMS). There is Un Manifested

Supreme Space (UMSS) which is holding the physically manifested space. It has been well established once for and all that Einstein's general relativity theory breaks down at big bang singularity. So, both FLRW metric and Weyl's curvature tensor which are part and partial of Einstein's field equations can not predict pre big bang physics. In this project the author attempts to formulate a mathematical description of unmanifested supreme space and manifested physical space.

Fundamentals of Conformal Cyclic Cosmology

1. CCC is an Extension of GR, FLRW and Weyl Curvature Tensor`
2. Opposed to multidimensional string theory.
3. Opposed to Cosmological inflation.
4. Space and time are not created at the big bang.
5. Illustrates entropy in terms of information state phase space.
6. Second law of thermo dynamics is inevitable march toward a maximum entropy state of universe.
7. Disagrees with Stephen Hawking's back track over whether information is destroyed when matter enters into black holes.

8. Such information loss would non-trivially lower total entropy in the universe as black holes wither away due to Hawking radiation resulting in a loss in phase space degrees of freedom.

9. After 100123 years distance ceases to be meaning full as all mass breaks down into extremely red shifted photon energy, where upon time has no influence, and the universe continues to expand without event infinity.

10. This period from big bang to infinite expansion Penrose defines as an aeon.

11. The smooth hairless infinite oblivion of the previous aeon becomes the low entropy big bang state of the next aeon cycle'.

12. Conformal geometry preserves angles but not the distances of the previous aeon, allowing the new aeon universe to appear quite small at its inception as its phase space starts a new.

13. Black holes collisions from the previous aeon would leave concentric rings due to ripples of gravitational waves.

14. Penrose cites concentric rings found in the WMAP cosmic micro wave background survey as preliminary evidence for his model.

15. The geometry of infinite energy density of big bang early universe is conformal.

16. In very future everything will turn into mass less radiation, then there will be no usable energy scale and the geometry will also be conformal.

17. The distant past and distant future can be matched together since they share the same geometry.

18. There is no evidence that the universe will ever stop expanding and it is unclear whether conformal geometry can really solve it.

19. Is it possible to test the CCC experimentally? Penrose says that we might observe some remnant structures in the CMBR that have survived from the previous circle.

20. As per Penrose's calculation the entropy of the universe at the end of its existence (100123 years afterwards) will be so tremendous that there will be little energy for anything but an anti climatic uncorking. (the mathematics indicates there will be another universe)

21. As Penrose builds solid foundation for his argument in analyzing universal entropic accumulation and Newton's second law, the reader senses something tremendous looking –mysterious and compelling as black holes.

22. The second law of thermo dynamics is not an equality but an equality. The entropy of an isolated system is greater at later times than it was at earlier times.

23. The central mystery that underlies the profound usefulness of this remarkable physical notions is actuality.

24. Penrose —I am suggesting that there is a physically real region of space time prior to big bang that is the remote future of some previous universe phase and that there is also a physically real universe phase that extends beyond our t_+ to become a big bang for a new universe. This is CCC.

25. Penrose rejects string theory, extra space dimensions, Steinhardt's and Turoke's collision of D branes because, — none explicitly addresses the question of suppressing gravitational degrees of freedom in the big bang. This actually being the key to the origin of the second law of the thermo dynamics.

26. CCC removes the information paradox from black holes. In this theory phase space volumes are reduced in black holes, degrees of freedom are lost and entropy is gone. The thermodynamic of black holes involves the second law but if the phase space is flattened, then you have to subtract the information lost in black holes, and therefore the entropy of the universe can be said to exclude the entropy in the event horizon.

27. Penrose: no multiverses.

28. And it may be possible to make observations to see through into the previous aeon: colliding black holes would produce huge burst of gravitational waves carrying enormous amount of energy and which should be deducted in the CMBR by statistical physics.

29. And the end he explained that it is possible to mathematically work through the transition using classical equation. You don't need quantum mechanics equation.

30. At the end of the universe, after a googol (100100) years and all the black holes will evaporate due to Hawking radiation, the physical content of the universe will consist of photons (from Hawking radiation and from red shifted starlight and cosmic microwave background radiation) and also gravitons (which are also mass less and therefore can not be clocked), there will also be dark matter which interacts only with the gravitational field and therefore presumably, not be used as a clock either.

31. Electrons and positrons won't be able to undergo pair annihilation. The rest mass of these particles may fade away, perhaps converted into kinetic energy.

32. At the end of the universe the radiation would cool down to zero temperature and there would be zero density, the very remote future and the very remote past are very similar to each other in the sense of the use of Euclidean geometry. i.e., the distinction between the two is just an enormous scale change. Conformal stretching at the big bang brings infinity density and temperature down to infinite values, conformal equality at infinity brings zero density and temperature up to finite values.

33. Or put it in another way, at 10-32 seconds by early universe's state is dominated by conformably invariant physics inhabited by effectively mass less particles, gravitational degrees of freedom are largely suspended, a conformal stretching out gives a smooth non singular state inhabited by mass less entities largely photons and dark matter. At the other end of the time scale, the ultimate exponentially expanding universe is inhabited by mass less ingredients photons.

34. This then suggests the universe is an extended conformal manifold consisting of many infinities successive aeons. The mathematics of the theory actually requires the existence of dark matter and dark energy. It also requires information laws in black holes are rather the loss of degrees of freedom. I ignore that this only be a little contention with physics.

35. Twelve locations out of 11,000 studies showed the concentric circles. They are looking for more (People needed to do this statistical analysis. Apply for job)

36. Entropy (randomness) to be always increasing which implies it had a very low value at the big bang.

37. Conformal scaling of tensors in field equations.

38. The universe or space time has a geometry not the plane Euclidean geometry. But conformal geometry where shape and angles are preserved when the underlying fabric is distorted. In this geometry infinity becomes a definite boundary rather than an unattainable end points always approached but never reached.

39. After 100100 years it is an aeon again the universe will come to final end which is the state of another universe. Penrose Calls this theory conformal cyclic cosmology. The length of an aeon is determined by the expansion and cooling of the universe where long after the stars have died and become cold dwarfs or black holes. Space time consisting of these cold massive objects and low energy photon and graviton.

The black holes themselves loss mass by Hawking radiation which take place under these vast periods of time. General relativity predicts the mass less photons and gravitons are oblivious to time. If you cannot measure time you cannot measure distance. So, the condition of the universe near the end of an aeon is such that time and distance no longer exist but conformal geometry still will apply. Penrose shows that in these circumstances there can be smooth and continuous transition from —before big bang to after big bang.

40. Penrose addresses a mechanism which could transfer observable effects from one aeon to the next which could be deductable in the cosmic background microwave radiation.

41. The far future phase of the universe can loss

entropy as matter is drawn into black holes.

42. Penrose's theory requires that over the length of an aeon all the mass of the universe disappears and is converted to mass less radiation.

43. Perhaps at the —end of time when the radii of curvature of space time have become infinitely large, the geometry transforms into infinitely small radii and the next big bang take it from there.

44. What came before big bang?. How did the universe begin?

45. Cyclic indicates that the universe somehow circles back to a condition at which it could start all over again, in another big bang, an endless cycle of death an rebirth.

46. Conformal refers to a particular type of geometry which can explain why the universe won't merely keep expanding forever. A geometry is said to conformal if its properties do not change when it is transformed in a way that preserve angles but not distances.

47. Penrose says that in physics based on conformal geometry, there is no way to characterize either distances or energy levels as —smalll or —large

48. Geometry of pre big bang phenomena is conformal geometry.

The author's New model of pre big bang phenomena

1. According to standard model of cosmology, space and time started at the big bang. But this space is only a manifested physical space (MPS)

2. There is un-manifested Supreme space (UMSS). The UMSS holds our MPS.

3. The UMSS has a number of, or even infinity of singularities. In the figure the dots denote space-time singularities.

4. There are a number of big bangs in the UMSS. I the figure A and B are such big bang and expanding Universes.

5. There are multiverses in the UMSS. In the figure, the universes above A and B represent such universes.

6. The collision of two singularities gave birth to our universe. This is the big bang. This occurred in the UMSS.

7. The expansion of our universe and other universes are due to the pulling gravitational forces of near by singularities.

8. When a singularity in the UMSS approaches our universe and other universes the rate of expansion of MPS increases. i.e., acceleration of the expansion of MPS occurs.

9. When a singularity in the UMSS nears a universe of MPS, it swallows MPS. This is the end of the MPS.

10. Then creation of a new MPS starts when two

or more singularities collide with each other in UMSS.

11. The geometry of pre big bang physics is null geometry like a null set in set theory.

12. Tiny hot dot singularities of the unmanifested physical space and manifested physical spaces are all in elliptic motion.

Penrose vs. Kalimuthu

I . *On the geometry of pre big bang model of universe*

Geometry has meaning if and only if there is an object in space. In Penrose's pre big bang model there is no even sub atomic particles at all. In his model only there is energy. To repeat once again, geometry holds good provided with there is matter or object in space. The geometry of pre big bang universe is null geometry.

It is known that Einstein's general relativity theory is a geometric interpretation of gravity. Einstein himself used to tell time and again that gravity is not a force. But a manifestation of curvature of space caused by matter and energy. The presence of mass in the space alters the geometry of space. How?. Light rays coming far away near massive object in space bends towards that object due to the curvature of the space. The light which apparently seems to be travelling like a straight line or along a straight line begins to move in geodesic path near their massive object. i.e., light travels in the curvature of space. This is the geometric distortion of space due to the presence of the matter.

What is the geometry of our space? Einstein's field Equation is given by

$$G = \frac{8}{c^4} G T$$

[where G is Einstein's tensor denoting space-time curvature, T is Riemannian tensor expressing matter and energy of an object, G is Newton's gravitational constant, c is the velocity of light and k is the radian]. To describe the geometry of space-time, a constant k has been included in the RHS of above equation by scientists. So, the geometry of space-time is given by

$$G = \frac{8k}{c^4} G T$$

If $k=+1$, it implies that the geometry of space time is Riemannian and the universe is closed. Because Einstein formulated his field equation by assuming his equivalence principle which states that the inertial and gravitational masses are identical (i.e., $m_i = m_g$) and applying Riemannian curved geometry. If $k = -1$, then the geometry of space is Hyperbolic and the universe is open. If $k = 0$, the LHS of Einstein's

field becomes zero. i.e., there is no curvature at all. This indicates that the geometry of space is Euclidean.

Until the publication of seven year long Wilkinson Microwave Isotropic Probe (WMIP) space craft the geometry of space and the nature of universe was unknown phenomena for scientists. Currently WMIP observations very clearly proved that our universe is flat. WMIP's observations are possible because there is matter in universe. There is absence of matter in Penrose's model of pre big bang universe. As we have mentioned above, geometry is inconsistent in the absence of matter.

II *On the entropy of our universe*

The first law is about the conservation of energy which states that energy can be neither created nor destroyed. But one form of energy can be converted into another form. The second law is that the entropy of a system our universe will increase in time. [***] These are not theories but the laws of physics. The laws of physics are same everywhere in the universe. Penrose says that in far future black holes will pull and swallow all the matter. Why should black holes attract all the mass of the universe? What is the mechanism? Penrose has authored many papers on black holes. But he did not propose the reason for this. Penrose says the universes will lose its entropy when the black holes suck all the matter of the universe. Penrose says the black holes will wither away by Hawking radiation. i.e., true. In quantum mechanics when particles and their anti particles collide annihilate leaving energy. Similarly black holes evaporation will definitely leave enormous energy or other wise it violates first law of thermo dynamics. And also it is a serious violation of one of the predictions of Einstein's special relativity theory regarding the equivalence of mass and energy. This being so, there is no loss of entropy.

Special relativity theory of Einstein proved that mass varies with velocity. Observations and experiments have clearly shown that the universe is not at rest but continuously expanding. And also it had been proved that the rate of acceleration is increasing. Latest computations reveal that the speed of universal expansion is that of light velocity. This is a major paradox in Penrose's conformal cyclic cosmology model. According to mass velocity relation the moving mass of an object can not vanish in to blue. My model incorporates that the universe is in motion and it can not loss its mass.

III *On the origin and end of time*

According to widely accepted and observationally approved CDM model of cosmology both space and time were created at the big bang. The cosmic microwave background radiation (CMBR) invented by Penzias and Wilson in 1964, NASA'S Wilkinson Microwave Anisotropy Probe (WMAP), Cosmic Background Explorer (COBE),

Boomerang experiment and Planck Mission have all confirmed that the space and time are created at the big bang.

Let us make a logical analyses of Penrose's statement: Penrose postulates that space and time are not created at the big bang. He also re-postulates that after a long period of 10¹⁰⁰ years both distance and time will vanish. Unfortunately Penrose failed to state the beginning of time in his model. The no trace of beginning of time in Penrose's model is a major drawback. I agree that time and space created at the big bang.

IV The other side of entropy

The other definition of the entropy states that the entropy of a isolated system will decrease its available energy to do work. But the total energy is a constant. The energy of the universe from origin to end is a constant. The universe started its expansion right from the origin. Current observations and experiments proved that the rate of acceleration is increasing. Sooner of latter the velocity of the expansion will over take the velocity of light. Von Flanderman showed that the speed of gravitation is millions of millions of kilometers per second. His papers were published in Physics Letters A. My theory outlines that more the other singularities near our universe and more the velocity of acceleration will increase. The singularities pull is very enormous that an appropriate time either swallow our universe and scale our manifested torn it into pieces and through away in the un manifested space. Einstein's special relativity states that the moving mass of an object will not become zero. Because visual hold that even during the end of our universe there will definitely some mass obeying special relativity. So, Penrose's postulation is not true.

V On the multiverses

There are multiverses and antigravity worlds.

VI On big Freeze (heat death), big crunch, big bounds and big rip

There is no evidence for this. In my model the end of the universe happens due to the strong pull of the nearing/nearby singularity whose curvature is infinity. To make this easy understandable, when a mass (including light) approaches the event horizon of a black hole, the black hole sucks the mass. The infinity curvature of the black hole performs this physical phenomena. Similarly the other singularities of UMPS will swallow our universe. This is end of our universe.

VII On singularity

From where did this universe come from? What is the dynamics behind the origin of universe? What is the evolutionary of formation of this universe?

In my model the un manifested supreme space accommodates our manifested physical space. There

are a number of singularities in the un manifested physical space. The space is also n object. The space is bound energy. In elementary school we have learnt that energy is capacity to work. That is only one side of the phenomena. The other truth is that both matter and energy are the another forms of light. The un manifested physical space is made up of light. Even the manifested space whose source is the un manifested physical space is a container of light. My model theories that space, fundamental particles, stars, galaxies, clusters, supernovas, black holes, worm holds and even gravity are all made up of light. As per Maxwell's equations light is an electromagnetic wave. According to quantum physics light is both a wave and a particle. The fundamental particles are the different forms of light. So each and every content of this universe including humans and plants are all another form of light.

It is generally believed that our universe came into being out of nothing. Logically and scientifically it is far from the truth. The universe not a miracle but a pure science. The concepts of science is hypothesis, mathematical formulation, observation and experiments.

There are a number of orbiting un manifested supreme spaces due to this mechanism and gravity. A physical process spinning and compressing takes place in each and every un manifested physical space. The prefectural and non sstop of this process accumulate in the formation of singularity. And the similarity is also orbiting in the un manifested supreme space obeying Einstein's special relativity theory. The main thing is that the general relativity theory of Einstein does not hold at singularity but the special theory of relativity propounded by Einstein not only holds but also dictates the dynamics of singularity. To conclude with, the general relativity is special case but the special relativity is the law of singularities in the un manifested supreme space.

Einstein's general relativity predicted about big bang, expansion of the universe, geodesic effect, orbital motion of mercury, perihelion of mercury, space- time curvature, gravitational lensing, gravitational waves, gravitational time dilation, black holes, worm holes, dark matter, dark energy and frame tracking. All these phenomena have been experimentally verified except gravitational waves. The effects of gravitational waves have been indirectly noted. Similarly my model requires mathematical formulation, observation and testing.

A brief survey of the second law of thermo dynamics

Thermodynamics is defined as the study of energy, its forms and transformations, and the interactions of energy with matter. [1,p.5]

Energy can exist in a number of forms, electrical

energy, chemical energy, potential energy, kinetic energy, PV energy, mechanical energy, nuclear energy etc. The laws of thermo describe the laws by which transformations in energy must abide. They have never been shown false, and they have been demonstrated so thoroughly, that they are not considered theories but laws. The field of engineering is based largely on these laws and in most fields of engineering, proposed processes must first be shown to satisfy these laws to make further consideration.

In thermo dynamics W denotes work. Energy transfer due to a force acting against a resistance. In most general sense, work can be described as change. Q denotes heat transfer. The three types of energy transfer are conduction, convection and radiation.

The first law of thermodynamics

This law states that energy neither can be created or destroyed. This is called conservation of energy.

—The first law is generally stated in terms of a closed system, also called a control mass. So an auxiliary law is the conservation of mass: the mass of a control mass never changes [1,p.120]

For a closed system (control mass)

—A change of the total energy (kinetic, potential, and internal) is equal to the work done on the control mass plus the heat transfer to the control mass [1,p.121]

—Although energy assumes many forms, the total quantity of energy is constant, and when energy disappears in one form, it appears simultaneously in other forms [2,p.22] In detail,

— A change of the total energy (kinetic, potential and internal) is equal to the work done on the control mass plus the heat transfer to the control mass [1,p.121].

— Although energy assumes many forms, the total quantity of energy is constant, and when energy disappears in one form, it appears simultaneously in other forms. [1,p.22]

The second law of thermodynamics

—The entropy S, an extensive equilibrium property, must always increase or remain constant for an isolated system [1,p.187]

—Entropy is a measure of disorder of the energy of the system. Ordered energy is available to do work, disordered energy is not. So, mathematically we see that entropy temperature is the amount of disordered energy at that temperature **Equilibrium in thermo dynamics**

—Equilibrium is a word denoting a static condition, the absence of change. In thermodynamics it is taken to mean not only the absence of change on a macroscopic scale. Thus a system at equilibrium is one which exists under such conditions that there is no tendency for a change in state to occur. [2.37]

—Equilibrium, the state in which all properties

stop changing, is defined by the second law as is the state of maximum entropy, that is, there is no more energy available to do work, and no capacity for changel

—A system in equilibrium doesn't always increase its entropy, rather it minimizes its free energy and one way to minimize free energy is to maximize entropy. **Isolated system**

—An isolated system is one in which there is no mass or energy transfer across system boundaries. **Closed system**

—Closed system, or Control Mass, which means that the mass of the system is

constant, and mass is not allowed to cross the system boundaries **Open system**

—Open system is a system in which mass is allowed to cross the system boundaries One more interesting entropic phenomenon is given by —The physical situation pertaining to a thermodynamic system is very closely analogous to the geometrical

situation described. Again, any equilibrium state can be characterized either as a state of maximum entropy for given energy or as a state of minimum energy for given entropy. But these two criteria nevertheless suggest two different ways of attaining equilibrium. As a specific illustration of these two approaches to equilibrium, consider a position originally fixed at some point in a closed cylinder. We are interested in bringing the system to equilibrium without the constraint on the position of the piston. We can simply remove the constraint and allow the equilibrium to establish itself spontaneously; entropy increases and the energy is maintained constant by the closure condition. This is the process suggested by the entropy maximum principle [4,5.1]

Equations relating to entropy

$$\frac{S}{T} = \frac{Q}{T} \quad (1)$$

Where S is the entropy, Q is the heat content of the system, and T is the temperature of the system. [5 & 6]

As long s the temperature is a constant, it is a simple enough exercise to differentiate equation (1), we get

$$\frac{S}{T} = \frac{Q}{T} \quad (2)$$

A simple substitution allows equation (2) to become

$$S = \frac{(U - W)}{T} \quad (3)$$

Where

U is the energy input to the system and W is the part of that energy that goes into doing work. So we have a better idea of the classical relation between work, energy and entropy. [5 & 6]

The general form of the definition of entropy in statistical mechanics is given by

$$S = k \sum P_i \log(P_i) \quad (4)$$

Where P_i is the probability that particle i will be in a given microstate and k is an arbitrary constant. [5 & 6]

—The law that entropy always increases, holds, I think, the supreme position among the laws of Nature. If someone points out to you that your pet theory of the universe is in disagreement with Maxwell's equations then so much the worse for Maxwell's equations. If it is found to be contradicted by observation—well, these experimentalists do bungle things sometimes. But if your theory is found to be against the second law of thermodynamics I can give you no hope; there is nothing for it but to collapse in deepest humiliation! — Sir Arthur Stanley Eddington, *The Nature of the Physical World* (1927)

—The tendency for entropy to increase in isolated systems is expressed in the second law of thermodynamics—perhaps the most pessimistic and amoral formulation in all human thought! — Greg Hill and Kerry Thornley, *Principia Discordia* (1965)

—There are almost as many formulations of the second law as there have been discussions of it!—Philosopher/Physicist P.W. Bridgman, (1941)

Discussion

In conformal cyclic cosmology the universe under goes a repeated cycle of death and rebirth, with the future time like infinity of each previous universe being identified with the big bang singularity. The heart of Penrose's work relies on FLRW metric and Weil's curvature tensor. But the whole general relativity breaks down at the big bang. How is it possible for a theory which does not hold at the big bang can reveal the hidden physical phenomena of the pre big bang? Logically analyzing without assuming mathematics and physics it is highly impossible.

Penrose says that a certain amount of gravitational radiation is preserved across the boundary between aeons. Penrose believes that is itself necessary to explain cosmic acceleration without appealing a dark energy matter field. But Penrose again with dark matter and dark energy. So, I sincerely

argue that even if that so called radiation exists, it will suppress the cosmic acceleration and hence Penrose's claim can not be true. Above all for particles such baryons the boundary between aeons is not a boundary at all, but just a space like surface that can be passed across like any other. Here Penrose is at chaos and confusion and equates boundary with surface.

Penrose and Gurzadyan claim that the concentric circle coverage by 7 year long Wilkinson Microwave Anisotropy Probe are observational verification for the consistency of conformal cyclic cosmology. But three other different groups independently disproved the statements of Penrose and Gurzadyan. [8, 9, 10]

Conclusion

Further studies and probes may be focused on the following:

1. To formulate that the un manifested supreme space gave birth to manifested physical space.
2. To locate observational evidence in support of the above hypothesis within Wilkinson Microwave Anisotropy Probe's findings.
3. The problem with quantum physics is that it is not geometrized. That is why quantum mechanics is incompatible with general relativity. The side result of this project is to show that the unification of standard model of particle physics and Lambda ADM model of standard cosmology is not possible at all.
4. Besides, this project will show the ultimate reality of the Nature is impossible.

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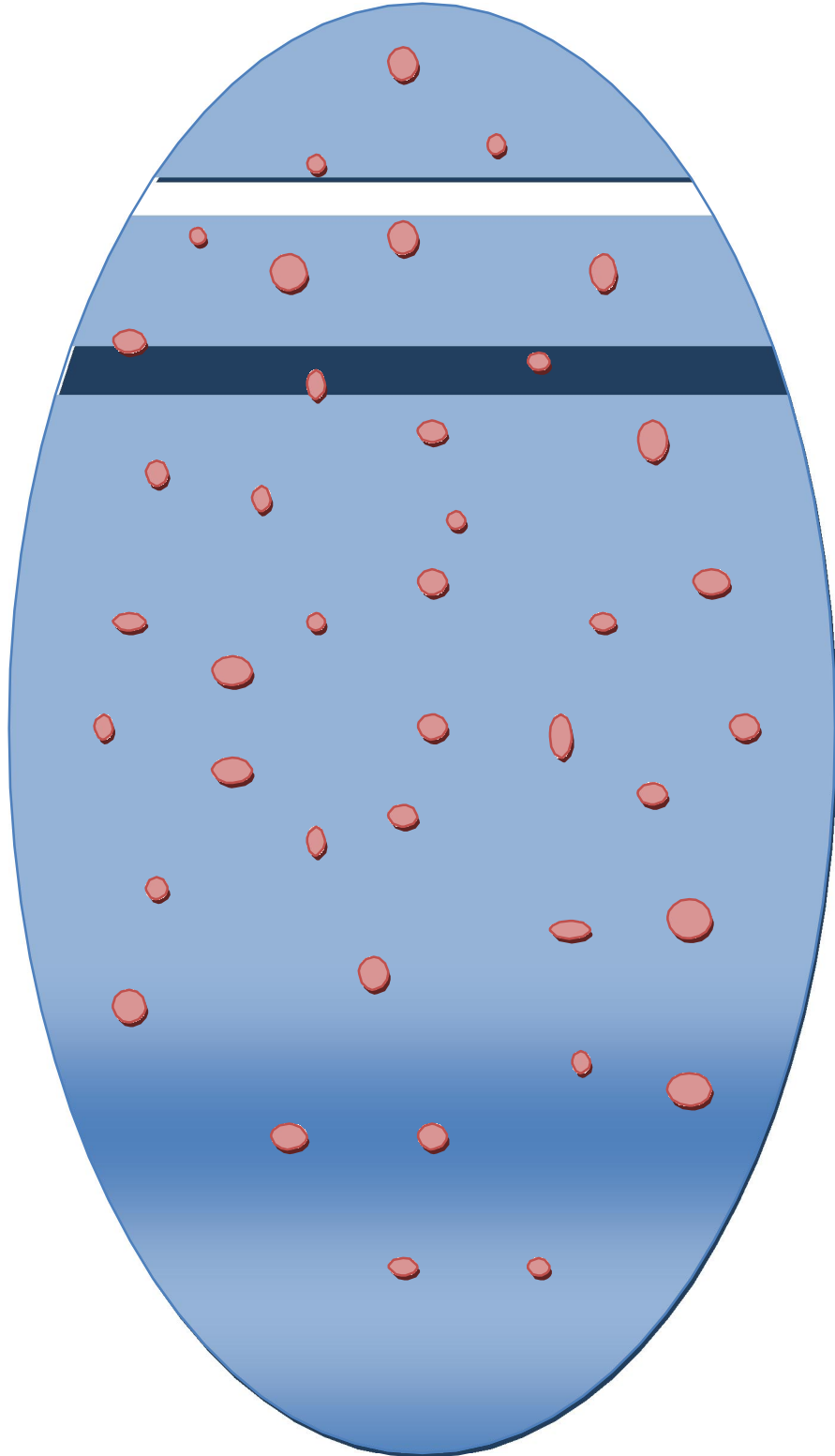


Figure 1 (The Un manifested supreme space containing infinity of singularities)

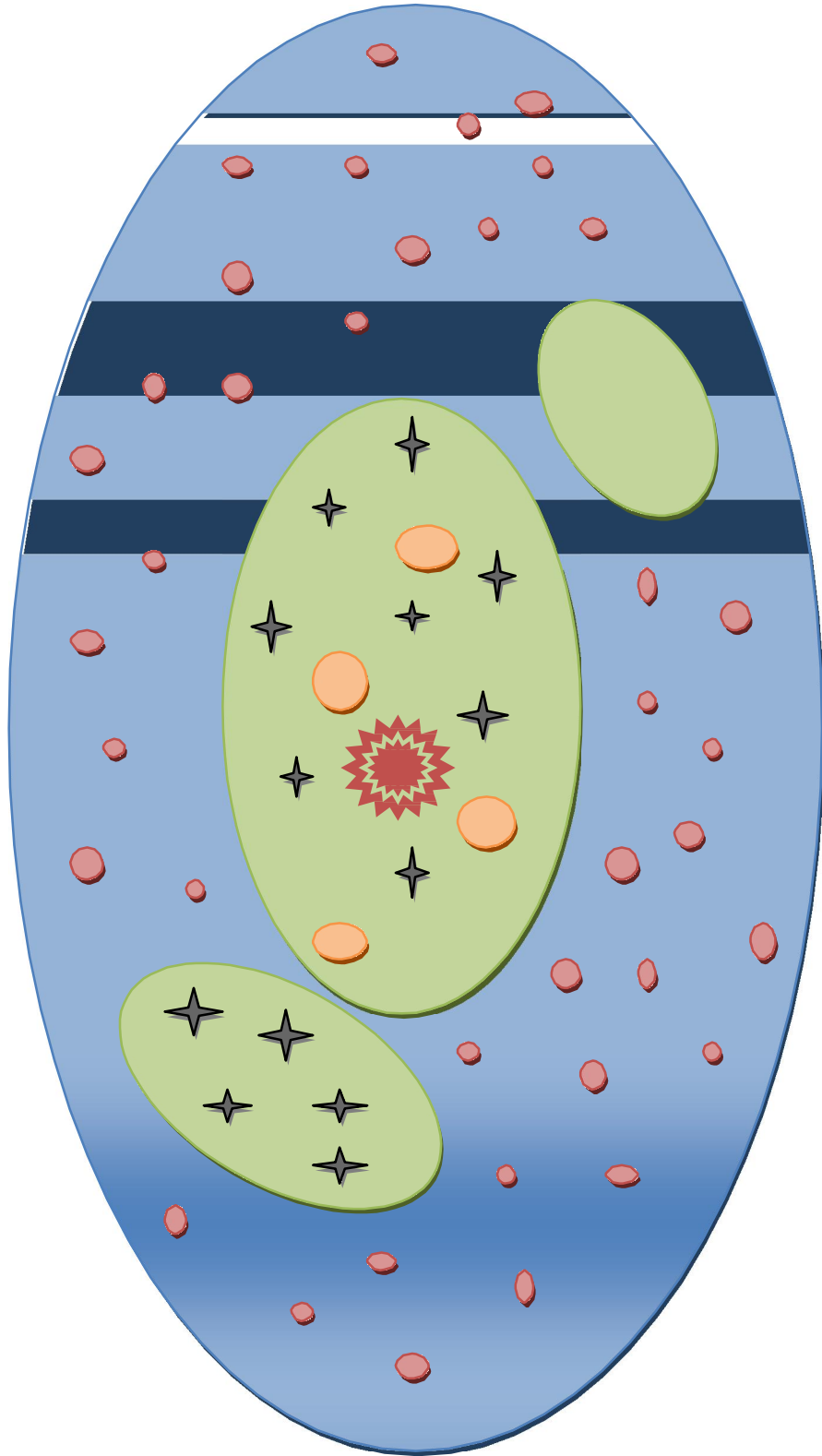


Figure 2 (The Un manifested Physical Spaces in the un manifested supreme space)

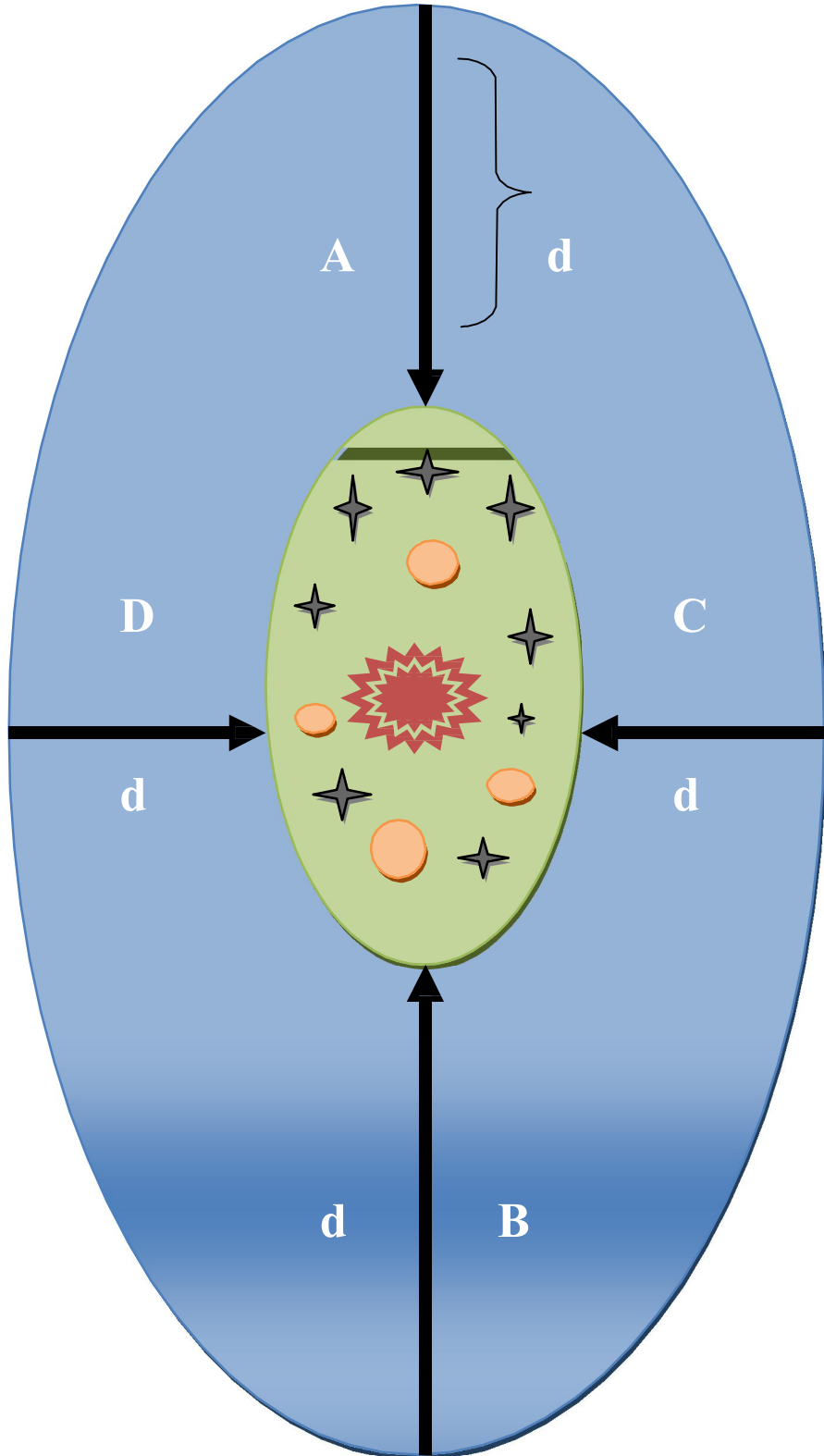


Figure 3 (A, B, C & D are the approaching singularities reveals our universe during the end of the universe)

Further Readings

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11/5/2020