



Birth and Death of Physical Universe

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Abstract

Any event in the universe has a beginning as well as an end. Thus, it is natural to think that the physical universe itself had a beginning (birth) and it is going to have an end (death). Vedic science describes the birth and death of universe is cyclic. Vedas always persuaded a creative agent. Brahman (God) is the creator of the universe and the creation is not one time but many times in cycles of fixed time interval. Modern science accepts the birth of universe from Big Bang. From the uniform distribution of galaxies in the sky, the nature of red-shifts of light from distant galaxies and the nature of background radiation from all directions, scientists traced back to the birth of universe from an explosion followed by expansion which they call **Big Bang Theory**. Scientists made many assumptions to arrive at the precondition for Big-Bang. Big-Bang theory considers onetime creation of the universe. For a cyclic universe the end condition of one cycle is the start condition of next cycle. Both Vedic science and modern science make many assumptions to explain their perceived life pattern of the universe. Though the Big-Bang is accepted by many but it has many limitations which is discussed in this paper. This author values both concepts on universe formation and proposes a new theory using the most fundamental interactions of mass and space. The new theory justifies periodic integration and differentiation of mass and space of the universe leading to cyclic birth and death of the universe.

Hindu Cosmology (Vedic Science)

According to Hindu cosmology, the universe is cyclically created and destroyed. The Big Bang Theory of modern science describes only onetime creation assuming many preconditions therefore does not relate to the true beginning of everything but only the beginning of the present phase of one cycle of the universe. In Vedic language Brahman (God) creates the universe in a periodic manner and the period is twice the life period of Brahma. There are 360x100 day-cycles in the life period of Brahma expressed in Brahma's time scale (1-day time part of Brahma's day is 4.32 billion years in earthly time scale). Lord Brahma has a life span for 100 Brahma-years which is 311 trillion and 40 billion earthly years. After Brahma's "death", it is necessary that another 100 Brahma years pass until a new Brahma is born and the whole creation begins a new phase. This process is repeated again and again, forever with the cycle time of 622.08 trillion years.



Hence Big Bang is not the beginning of everything. It goes to describe only the beginning of some phase of the universe cycle.

We notice, the dynamic universe is stable with many periodic motions of its constituents (celestial bodies). The earth where we live has a periodic rotation about its own axis which makes day and night during every rotation period. One may say a day comes to existence by birth of the sun in the morning and the day disappears by the death of the sun in the evening. At the death of a day night takes the birth when people sleep. The day period and night period of a day cycle have same duration. At the death of night, the day takes a rebirth. However, this is not the fact. We know it well, the sun neither dies in the evening nor takes a rebirth in next morning, it exists all times and at night the sun can be seen from other side of the earth. Thus, the cyclic birth and death of the universe as told in Vedas may be a simple correlation of some long-range periodicity of cyclic conjunction of planets or a definite time period where the ratio of revolution of planets becomes a ratio of integer numbers.

Any orbital body when makes one revolution around its nucleus body such as the revolution of the earth around the sun or the revolution of sun around the nucleus of milky-way galaxy, the orbital body always gains one rotation per revolution with reference to distant celestial objects. This gained epicycle rotation has a different significance as compared to normal rotation of orbital body with reference to its nucleus body. During the epicycle rotation the orbital body, say the earth, takes an excursion in its orbital path which changes the proximal distances of neighbouring stars and also changes the orientation of stars with respect to earth-sun system besides the changes in orientation of other planets and satellites occurring due to normal rotation. The radiation exchange between the earth and its background celestial bodies changes with different instantaneous position of background celestial bodies. Therefore, living on earth, one would experience different periodic variations in exchange radiations correlating with the periodic position of neighbouring celestial bodies relative to the earth. If some phase of a long-range cosmic period produces unfavourable cosmic radiation for existence of life on earth then life on earth would perish and a favourable radiation at some other instant in periodic motion would give birth to new life on earth. This is how, Hindu literature, including Vedas and the Puranas, carries the belief that time is divided into different yugas in a cyclic manner. The term yuga is derived from yoga and yoga from samyoga or conjunction of heavenly bodies. Therefore, the origin for every unit of yuga relates to specific conjunction of celestial bodies in the sky. The celestial bodies in the proximity of the earth, such as the sun, moon, planets and star-constellations go to form different yugas which are more than a year. For example, the conjunction of the sun and moon at the asterism of Dhanistha in the zodiac sign Makara (Capricorn) in the month of Magha on new moon day repeats in every 5 years forming 5



years yuga. Vedanga Jyotisa has given special names to these five years as Samvatsara, Parivatsasra, Idavatsra, Anuvatsara and Idvatvatsara. The planet Jupiter takes 12 years to go around the sun and forms the Brihaspati yuga of 12 years cycle. The conjunction of the sun and moon at Dhanistha constellation while Jupiter at makara (Capricorn) repeats after 60 years thus forming the basis of 60 years yuga. The rare occasion of Sun, Moon and Brihaspati meeting at Dhanistha repeats at interval of 865 million years. If this is considered as one day (ahoratra) in some scale then the time span of only the day time would be 432.5 million years. This conjunction occurs 5 times in a kalpa or 10 times in 2 kalpas which is one ahoratra (day + night) of Brahma. There may be other correlations of conjunctions of planets linking maha yugas. Again, when the sun goes around the nucleus of milkywaygalaxy, then many long period yugas are formed with respect to star constellations and the galactic constellations which are probably not explored.

From the above discussion it is clear that the yugas and maha-yugas have scientific basis and it is not purely philosophical. Thus, Vedic science has a strong scientific basis but it uses the philosophical language to describe Vedic science. Some yugo like all 7 planets at the asterism of Dhanistha in the zodiac sign Makara along with the node Rahu may produce conditions for life creation and that with node Ketu may create conditions for destruction of life or produce conditions for drastic changes in features and characteristic properties of living beings. The different observed cyclic periods obtained from planetary conjunction or otherwise, are simply correlations of events in the universe and none of these periodic cycles can answer to the cyclic period of creation and destruction of the physical universe. The cycle of creation and destruction of physical universe cannot be speculated from the periodic cycles of celestial bodies (planets and stars). The finding of modern science that the age of the universe is 13.5 billion years is perhaps not correct as it simply relates to cyclic period of some conjunction of planets at specific house of the zodiac only. The Big Bang theory was proposed primarily to justify the observed large-scale homogeneous structure of universe having equally spaced galaxies and also the uniform background radiation from all directions. According to Big Bang Theory there should not be any large-scale clusters of galaxies or great voids in space. This Grand Theory is now facing problem after the discovery of variations in the large-scale structure of the universe with grouping of galaxies showing non-homogeneity in large-scale structures and pockets of very large voids. The strength and weakness of Big Bang Theory is discussed below.

Big Bang Theory

Big Bang theory in modern science presupposes that some 10 to 20 billion years ago, all of the matter and energy of the universe was compressed into a cosmic egg, or plasma ball, consisting of sub-atomic particles and radiation. Compression of subatomic



particles and radiation requires huge energy as the process is never self-propagating following the normal laws of nature. Perhaps it is not proper to say – the laws of nature were not born then. Hence it is not known as to how such cosmic egg formed? And from where it came? The proponent of big bang theory did not analyse the feasibility of the formation of cosmic egg and the dynamics that brought it to the location of explosion. They simply accepted that the cosmic egg was just there. And again, equally inexplicable - why the cosmic egg exploded? What was the condition that triggered the explosion? However, the explosion of cosmic egg made the matter and radiation to expand. The expansion made the system to cool sufficiently for elements to form. Protons and electrons combined to form hydrogen atom. Neutrons were subsequently captured to form helium of atomic weight four. All other elements were formed at later stage. It is supposed - the gas expanded radially in all directions until they were so highly dispersed that an extremely low vacuum and low temperature existed but no oxygen, nitrogen, phosphorus, carbon, sulphur or other elements existed. The universe consisted essentially of hydrogen gas. It is then told, somehow, the molecules of gas that were racing out at an enormous speed in a radial direction began to collapse on themselves in local areas by gravitational attraction. The molecules within a space of about six trillion miles diameter collapsed to form each star. Then about hundred billion stars somehow collected to form each of the galaxies and it was estimated 100 billion galaxies to have formed in the universe. Our solar system formed about five billion years ago from a cloud of dust and gas as remnant of explosion of previously existing stars. No satisfactory theory exists to explain any of these described events. The sequence of events discussed above apparently appears as a fiction story. However, cosmologists stand firm in their conviction that all of these presupposed events would eventually yield to credible explanations. Even with all these assumptions the Grand Big Bang theory fails to justify the new cosmological observations, thus credibility of the theory is lost.

Based on the Big Bang theory, cosmologists predicted that the distribution of matter throughout the universe would be homogeneous. Hence, the distribution of galaxies in the universe would be essentially uniform. No matter in which direction one looks, one would see the same number of galaxies. There would be no large-scale clusters of galaxies or great voids in space. Early observation showed large scale homogeneity with uniformly equal spacing of galaxies which gave a trump card to Big Bang theory. Relatively recent finding has now revealed the existence of massive super clusters of galaxies and vast voids in space. Thus, the universe is different from that predicted by Big Bang Theory. We may see now how the footing of Big Bang theory changes with time. The article 'The Big Bang Theory Collapses' by Duane Gish [11], is the main reference for describing the state of the art of Big Bang Theory.



In 1986, R. Brent Tully of the University of Hawaii, showed that there were ribbons of super clusters of galaxies 300 million light-years long and 100 million light-years thick, stretching out about a billion light-years, and separated by voids about 300 million light-years across [1]. Such large-scale structure to form by considering Big Bang concept would require 80 billion years whereas the present age of universe is supposed to be somewhere between 10-20 billion years. The trump card of Big Bang theory now becomes weak.

In November 1989, Margaret Geller and John Huchra, of the Harvard-Smithsonian Centre for Astrophysics, announced their sky-map showing new structural forms in the universe which they termed "Great Wall" (a huge sheet of galaxies 200 million light years across and 700 million light years long [2]. Again, a team of American, British, and Hungarian astronomers discovered even larger structures [3]. They found galaxies clustered into thin bands spaced about 600 million light years apart. This huge shell and void pattern to form would have required nearly 150 billion years following Big Bang cosmology. The Big Bang trump card gets further weakened.

In January 3, 1991 Will Saunders and nine fellow astronomers published the results of their all-sky redshift survey of galaxies detected by the Infrared Astronomical Satellite. This survey revealed the existence of a far-greater numbers of massive super-clusters of galaxies than can be accounted for by Big Bang cosmologies [4]. The trump card got further weakened as the observed placement of galaxies are now different. How can one accept the Big Bang Theory with no homogeneity in large scale structure?

Cold Dark Matter (CDM) Theory

Cosmologists added new hypotheses to explain the reasons for failure of Big Bang Theory. One such hypothesis is the introduction of Cold Dark Matter (CDM) theory. The dark matter concept was first introduced to explain the slow orbital motion of the outer stars in the galaxy thereby protecting the law of universal gravity. This new concept of dark matter was found successful for the orbital motion of stars in a galaxy. There is no guarantee that the dark matter physics would stand the test of time. This time again to protect the Big Bang Theory, cosmologists introduced the new cold-dark-matter (CDM) theory. According to this theory, 90-99% of matter in the universe cannot be detected. If CDM really exists then it would produce sufficient gravitational pull to create large clusters of galaxies. The structures discovered during the past few years, are so massive that their formation cannot be explained even by the new CDM concept.



David Lindley writes "Cold Dark Matter Makes an Exit." [12] Likewise, Caltech cosmologist S. George Djorgovski, considering the astronomical observations states 'the demise of the notion of the existence of cold dark matter is inevitable' [5]. The CDM concept cannot explain the formation of giant super-clusters of quasars [6]. The trump card again lost its support that it gained through CDM concept. It looks the concept of dark matter or CDM is not a reality of nature. Because normal matter composed of mass and space has scope to provide a complete answer to all-natural phenomena. Thus, there is no need of introducing concepts like dark matter or cold dark matter. Any un-natural hypothesis deviates science from reality of nature.

Background radiation

Big Bang theory predicts a background radiation equivalent to few degrees of Kelvin. In 1965, Arno Penzias and Robert Wilson, radio engineers at Bell Telephone Laboratories in New Jersey, discovered microwave background radiation of 2.7 K. This time the trump card of Big Bang Theory was revitalized and the evolutionary cosmologists were absolutely delighted. This discovery was considered the proof of the Big Bang Theory, and Penzias and Wilson were duly awarded Nobel Prizes. Nobody knew this saver of Big Bang Theory will become the killer of the theory one day. The background radiation turned out to be the additional evidence against the Big Bang theory rather than its proof. Big Bang theory predicts large scale homogeneous universe resulting perfectly smooth background radiation. When perfectly smooth background radiation was observed, the Big Bang theory took almost a rebirth for having got its proof.

The universe is no more homogeneous as it has been observed to have lumpy super-clusters of galaxies and great voids. Thus, the expected background radiation would not be smooth. It would be more intense in some direction and less intense in some other direction. However, all measurements showed perfectly smooth background radiation. Even the Cosmic Background Explorer (COBE) launched to an orbit did not show any non-homogeneity in the background radiation [7], ultimately leaving the cause of background radiation to be something else not known yet. Eventually the Big Bang theory has lost its charm and the cosmologists are looking forward for a fresh new look to alternative weak discarded theories. Theories based on plasma processes and steady-state theory came to active state from their coma state. Who knows, if any of these theories or an abruptly new theory would lead us to a clear understanding on the birth of the universe.

That apart, the Big Bang is not the beginning of everything,[3] but is just the starting point of the present phase of a cycle preceded by an infinite number of universes and to be followed by another infinite number of universes [4]. The periodic dynamics of a system also produces many periodic changes in its sub-systems. Thus,



the sub-periods of sub systems have to have a correlation with the period of main system. Hence the periodic dynamics within the systems of the universe ought to have a link with the periodic cycle of the universe as a whole. Thus, there is no wonder if the cyclic period of the universe estimated by any kind of study matches with the other. The preconditions of Big Bang event are only assumptions and no plausible theory supplements the assumptions. If the explosion of cosmic egg in Big Bang theory, is considered as the starting point of one cycle of universe formation then the preconditions of the event (Big Bang) should match with the end conditions of the previous cycle. Because we know 'the end of an event gives rise to beginning of another event for continuity of events. Thus, Big Bang is not the beginning of everything.

Our day-to-day understanding the events of nature is not affected whether we understand or do not understand as to how the universe was formed. However, a greater understanding of universe from its birth would help in developing a unified understanding of nature (similarity of structure and dynamics in all domains of nature). This would further help in finding the cause of the fundamental forces of nature. Thus, we must continue our sincere effort to understand the universe and its dynamics in a natural manner without too many assumptions as in case of Big Bang theory. The Big Bang theory was accepted as many cosmologists supported the theory. In accepting a new theory, it is not proper to consider factors such as who makes the proposition of a new theory to replace the existing theory? Despite large number of support of cosmologists, the Big Bang theory may go wrong if a few cosmologists find fault in it. Because, the acceptance of a fact or theory in science has to be decided by its merit of the theory.

The big Bang theory presupposes that the contents of the universe were present in the cosmic egg in different form. Obviously, the contents were compressed to extra ordinary density to form the cosmic egg. Somehow it took a preferred position and from there the cosmic egg exploded. Matter/energy was not created in the Big Bang. External energy was not required to promote the expansion of the universe as the contents were in extra ordinary high pressure and temperature. Thus, the expansion is a self-propagating process. Then what is the end state of universe or death of the universe? Does the universe take a rebirth after death?

Redshift may not be due to expansion of universe

Hubble's law is considered the first observational basis for expansion of the universe and gives evidence for the Big Bang model. The motion of astronomical objects (galaxies) due solely to this expansion is known as the **Hubble flow**. Edwin Powell Hubble is generally regarded as one of the most important observational cosmologists of the 20th century. Hubble showed that the recessional



velocity of a galaxy increases with its distance from the earth, known as "Hubble's law". Thus, Hubble's Law concludes for expanding universe. Though the law is widely known as Hubble's Law, it was first derived from the general relativity equation by Georges Lemaitre and made an estimate of the rate of expansion. Hubble confirmed the recession velocity from redshifts and determined accurate result of the constant. The red shifts were earlier measured and related to velocity by Vesto Slipher.

The concept of geocentric universe came up first and was confirmed by many astronomers but the reality is something else as we know it. Here the recession of the universe, in a way, is geocentric as the Hubble's Law measures the distance from the location of the earth. Earth is certainly not the centre of the universe- it is only the centre of terrestrial system (earth-moon system). The sun is the centre of solar system, the black hole as nucleus of Milky way galaxy is the centre of the galaxy. A system in larger domain containing galaxies has a different centre and the universe containing such systems has certainly a different centre. Therefore, the earth is not the centre of the universe and there is no reason why it should be? The Hubble's law that indirectly considers the location of earth as the centre of universe for the purpose of the expansion of the universe is not a right supposition even though the red-shift correlation yields result. Thus, the earth-based measurement of red-shift of light coming from galaxies is not a conclusive proof of expanding universe as the distances are not taken from the centre of the universe.

Many unnatural assumptions are made in Big Bang Theory only to justify the observed red-shift. It may so happen that the cause of observed red-shift correlating the distance from the earth is due to some other universal phenomenon of nature, which we do not know yet. There could many apparent forms of explanation of an event but the reality is only one. How to know which is that real one? One of the important criteria of a truth is that it should not have contradiction with any other realities (truths) that we know with confidence. If some of the known realities are not real (hypothetical) then a real thing may appear unreal on the basis of defective hypotheses. This has happened in many of the established laws of nature due to improper understanding of physical space and the lack of understanding to universal phenomenon of mass-space interactions. The cause of all laws in all domains being a derivative of mass-space interaction, different constants of proportionality of parameters in different correlating laws also bears correlation with the basic universal constant pertaining to the instinct of mass and space interaction.



New Light Tired Theory

In an expanding universe one would expect the average temperature of the universe has to fall as it expands. In contrast to this phenomenon the Doppler parameters of the Hydrogen clouds in Quasar spectra shows increase in temperature. How can this happen? Therefore, a new model for red-shift is needed to explain red-shifts in a static universe. One such model postulates that light from distant galaxies are absorbed and reemitted by electrons in the plasma of intergalactic space. In each interaction the electron recoils and energy are lost to the recoiling electron (New Tired Light theory). The reemitted photon has less energy with reduced frequency and increased wavelength and hence red-shifted. The observed Hubble relationship may now be expressed - 'light photons from a galaxy twice as far away, make twice as many interactions with the electrons in the plasma of inter galactic (IG) space, thus lose twice as much energy in transit and undergo twice the red-shift.' A relationship between red-shift and distance is found and, using published values of collision cross-sections and number density of electrons in IG space, a value for the Hubble constant has been derived and the same is in good agreement with measured values. The distant Ia-supernova takes longer for rise and fall of multicoloured light curves attributing the cause to time dilation which is not the direct result but a biased interpretation of expansion concept.

Steady state model of Universe

The Steady State model adopted the "Perfect Cosmological Principle", and assumed that the universe was the same at all times in respect of homogeneity (the same in all places) and isotropy (the same in all directions). The universe is observed to be expanding, therefore to maintain the density, matter must be continuously created. Hence, the steady state concept is not acceptable.

Proposed new theory of cyclic universe from mass-space interactions

According to the new concept proposed by this author, all existences in the universe are mass-space systems. Matter at any stage is a mass-space integral system and any space pocket of the universe in any domain contains space matter particles [8]. At present the universe is non-homogeneous in mass-space distribution. We notice mass rich matter (any matter with dense mass) emits mass rich particles to surrounding space structure and receives space rich particles from the space structure where mass merges in space and space infuses into mass. The present trend of mass and space flow reveals the interactions of mass and space as mass-mass repulsion, mass-space



attraction and space–space repulsion. The present basic interactions of mass and space fully satisfies the dynamics of the constituents of the universe in different domains of nature [9]. If the dynamics of universe continues to have the flow of mass into the space and flow of space into the mass then it would result in complete homogenization of mass and space in finer and finer scales where the existence of matter and space cannot be identified. At this stage when the merger of mass and space is complete, the universe comes to stand still and the mass-space interactions become defunct. One may say here, the universe without any activity is dead.

We find every natural event in this universe occurs in cyclic manner therefore we can safely make one assumption that the universe formation and destruction is also cyclic in nature with unlimited births and deaths of the universe. The pre-conditions of birth of the universe have to be provided by the end conditions (conditions after death) of the universe. At the death of the universe mass and space are found in fused state and the pre-conditions of birth of universe requires mass and space to have segregated and compacted separately to take the birth of universe from a Big Bang of mass and space in compact form. There are two ways of arriving at the precondition for birth of the universe. 1) Under some favourable condition, quantum transformation of fused mass-space is isolated to separate balls of mass and space. 2) Mass and space in fused state change their interaction norms so that the universe again become dynamic causing segregation of mass and space, thus the new mass-space interactions become mass-mass attraction, mass-space repulsion and space-space attraction. Therefore, the universe cycle comprises two phases, one leading to mass-space homogenization and the other leading to complete segregation. In a different language it may be said, the universe oscillates between two points i.e. mass-space union and segregation by changing the mass-space interaction norms.

This contraction phase of the universe may be assumed to have same length of time as that of the expansion-phase. At the end of contraction phase two compact balls, one of mass and the other of space are formed. Thereafter the balls of mass and space move away from one another due to mass-space repulsion. The mass and space of the universe then reverses their basic norm of interactions for the sustenance of the universe. The new norm is same as that prevailed in the expanding phase of the universe. No sooner the mass and space change their norm of interaction, the isolated balls of mass and space accelerate towards each other and ultimately make a head on collision causing fragmentation of mass & space thereby helping formation of different matter (mass-space integral structure) in different domains. Space is invisible and unperceivable hence the ball of mass was visualized as the cosmic egg. The initial non-steady state of mass-space dynamics continues for quite long time thereafter a steady state of mass-space dynamics appears with expansion of universe at slow rate that



occurs due to slow natural decay (aging) of matters through radiation exchange which maintains the dynamics of the universe. The mass/energy decay of matter (mass-space integral systems) in different domains goes to maintain local dynamics in different scales with having their contribution to overall dynamics of the universe. In this new hypothesis the mass and space contents of the universe are not destroyed at any time. The mass-space universe oscillates between two nodes of union and segregation of mass and space of the universe. The phase of expansion and the phase of contraction of the universe together form one cycle of the universe. This cycle repeats infinitely without a beginning or end. This new concept has similarity with the Vedic concept. The time scale of universe cycle is infinitely large.

The fractioned masses in Big Bang capture space from the surrounding and forms extra-nuclear space structure due to mass-space interaction. Thereafter the kinetics of segregation of mass is restrained by high pressure space-structure surrounding the dense matter and the expansion of space is hindered by the attraction from dense masses (celestial bodies). The mass-space dynamics of the universe gradually slows down and reaches a steady state. In the steady state, the universe also expands by radiation of mass rich radiation particles, which carries space in its extra-nuclear structure formed due to mass-space attraction. The mass of celestial bodies gradually decreases due to radiation. Therefore, the attraction to surrounding space to maintain the integral mass-space structure, slowly weaken, thereby allowing the space of the universe to expand due to space-space repulsion. Thus, we cannot say Big Bang was not there; universe is not expanding; steady state of universe is wrong; the universe formation is cyclic in nature etc. If we keep our window open in all directions and give equal importance to all schools of thought, a unified understanding of birth and death of universe becomes feasible. Unless the defective understandings are rectified they would hinder in accepting new theories on reality of nature including the new model of universe. For example, the solar radiation that we know is the radiation from the sun is radial outwardly from the sun. We do not yet know the inward radiation from the background space medium reaching the sun in radiation exchange process. The reality is that all radiation particles are mass space integral systems like the mass-space structure of solar system. Every nucleus in all domains has a core and crust. The core has a mass rich structure and the crust has a space rich structure. The core to crust volume-ratio of any particle gives the state property of the particle. The state of a particle is revealed by its temperature (energy level) with respect to some reference zero. In solar system the mass rich particles move outwardly whereas the space rich particles move inwardly. This inward radiation coming from interstellar space towards the sun is captured by the extra-nuclear space structure of the earth and becomes the inward radiation for the terrestrial system. The earth also has outward radiation. Thus,



the outward and inward radiation from and to the earth has radial direction and intensity remains nearly the same in all direction. This reality of inward radiation (background radiation) is misinterpreted as the residual effect of Big-Bang explosion. As the universe expanded, it cooled, leaving behind a faint radiation that is now observed as the cosmic microwave background [10].

Neither the concept of expanding universe following the Big Bang nor the concept of static universe with the 'New Tired Light theory' does not appear to have fully explained the state of the universe. Thus, one has to have a clear understanding of light particles in respect of its mass-space structure and energy level to understand the time dependent decay of energy level (red-shift). We are still in wave particle confusion even with the assigned compromising property of photon as a particle associated with a wave property. It is first required to remove duality from theory of light and bring clarity of energy & energy level micro domain particles. A photon particle in the new concept has a centrally organized structure having nucleus and extra-nuclear-space structure comprising mass and space. The nucleus undergoes a slow gradual natural decay like the decay of celestial body. Thereafter it would be possible to understand as to how the energy level of photon changes with time dependent decay of its mass-space structure. Light from distant galaxies takes longer time in travel longer distance, hence more decay of photon takes place in longer travel time which results lowering of energy level of photon. In the language of wave theory of light, the energy level of light decreases with decrease in frequency or increase in wave length. The process of decay is universal hence decay is present in matters of all domains and the decay mechanism is similar in all domains of the universe. The events in any domain are basically caused due to mass-space interaction, which may be described in different domain-based language for easier understanding. The decay of photons with time of travel can be conceptualised from the decay of celestial bodies in macro domain for example the decay of the sun.

Conclusion

Indian Vedic science describes the birth and death of the universe in cyclic manner. Many events of the universe are cyclic therefore the Vedic description appears rational for uniformity of nature. At present Big Bang Theory has greater acceptance. However too many assumptions made in promoting Big Bang theory. The observed large-scale homogeneous universe, nature of background radiation and the nature of redshift of lights from galaxies help to establish the Big Bang Theory. On the contrary, the universe is now found to be non-homogeneous with observed large clusters of galaxies and large voids. Even the new proposed cold dark matter (CDM) theory fails to justify the very large clusters and voids. The uniform background radiation no more



remains valid for the large scale non-homogeneous distribution of galaxy. There is no valid theory as to how the cosmic egg formed and how it came to the vicinity of the earth where it exploded. We also do not know the triggering mechanism of the explosion of the cosmic egg. To understand the birth and death of universe we need to understand the most fundamental universal law of nature without having any limitation. Thus, it is necessary to discover the most fundamental universal law which give rise to different domain-based laws of nature. The author has discovered the basic universal norm of the existing phase of the universe as mass-space attraction, mass-mass repulsion and space-space repulsion. Using this universal law, the state of universe at the beginning and at end of a cycle is predictable. The present phase of the universe has a trend for decay of matter (mass-space system) leading to complete homogenization of mass and space. Thus, it requires another phase of the universe where the mass and space of the universe would be segregated. Therefore, this phase requires opposite sets of mass-space interactions. The reversal of mass-space interaction gives opportunity to know the birth and death of universe in cyclic manner. The new mass-space interaction is the cause of gravity, charge interaction and hopefully other fundamental force interactions. Proper understanding of the basic mass-space interaction helps one to understand the cause of the fundamental forces. Thus, the fundamental forces are unified at the level of their cause and there is scope of a universal theory for all domains of nature. The new basic mass-space interaction leads towards revival of faith on consistency and uniformity of nature.

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References

1. R. B. Tully, *Astrophysics Journal* 303:25-38 (1986).
2. M. J. Geller and J. P. Huchra, *Science* 246:897-903 (1990).
3. E. G. Lerner, *Aerospace America*, March 1990, pp. 38-43.
4. Will Saunders, et al, *Nature* 349:32-38 (1991).
5. T. H. Maugh, II, *Los Angeles Times*, San Diego Edition, January 5, 1991, p. A29.
6. R. Cowen, *Science News* 139:52 (1991).
7. E. G. Lerner, *Aerospace America*, March 1990, p. 41.
8. <https://philosophyofnature.org.in/basic-constituents-of-universe-and-their-interactions>.
9. <https://philosophyofnature.org.in/different-domains-of-nature>.
10. <https://www.sciencedirect.com/topics/earth-and-planetary-sciences/cosmic-microwave-background-radiation>.



11. <https://www.icr.org/article/big-bang-theory-collapses>.
12. <https://www.nature.com/articles/349014a0.pdf>.
13. Birth and Death of Physical Universe, “volume-four- **Vedic Science Enriches Modern Science**” of the series Dynamics of Universe- interplay of Matter, Space and Charge, Published by Gyanajuga Publication, 2018.