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A Universal Model Integrating Matter, Mind, Consciousness, and Purpose

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ABSTRACT

This paper demonstrates the power of a wholesome consciousness-integrated science to reveal purpose and meaning to the universe and life in it. The approach of the scientific research is three-fold. First is to complete the picture of reality via integrating consciousness into a physical model and explain the observed universe behavior resolving the current paradoxes, singularities, and inconsistencies among the mainstream scientific theories. Second is to develop a framework for an integrated model of matter, mind, and consciousness founded on the wholesome reality. And lastly, demonstrate how the so-called purposeless physical laws lead to the ultimate purpose. This paper describes a validated as well as testable scientific model integrating the observed spontaneous decay of quantum particles into the theory of relativity to resolve the well-known paradoxes of modern science and cosmology. The proposed model provides a seamless integration between the classical and quantum reality as well as a fresh perspective on the ultimate universal reality and purpose. A successful agreement between the predictions and observations of the universe demonstrates the validity and credibility of the proposed approach. It also restores the once lost simplicity, beauty, purpose, and meaning not only to science, but also to the universe and life via a framework for an integrated theory of matter, mind and consciousness. It is shown that the apparent purposes of living systems at various levels of consciousness can be described in terms of goal-free mathematical representations of the universal laws. The ultimate (ideal) goal of all living systems is to achieve the state of absolute consciousness physically described as the Zero-point state of zero-entropy and fully-dilated space-time. However, the level of consciousness (awareness) of a specific living system determines its actual relativistic physical state, evolution, and level of purpose. Intelligent living systems are capable of self-inducing changes to evolve their level of consciousness and hence their specific purpose and goals. Nature and its laws offer choices to the living beings to choose reality and goals. The goal-oriented behavior is shown to be an orderly physical or cosmic trend governed by the universal laws and not an accident or an imperative.

INTRODUCTION

What I can recall, it all started one evening about ten years ago while helping my son with his high school physics homework. As I was walking away after giving him some hints to solve a problem, my son asked me- "Dad, does physics have anything to do with the real life? Is there any purpose to the universe and life in it? My teacher says that there is none." My answer was a casual agreement with the teacher due to the common belief that physics deals with the reality of the inanimate matter and not the real life or consciousness, and many a prominent scientists openly believe that there seems to be no purpose to the universe. However, his questions triggered a deep anxiety within my subconscious. Deep inside I felt that my answer to his questions had no basis other than a programmed or cultured response by any scientist to such questions.

Great achievements of science over the last few centuries, specifically in the last few decades, have enriched the material life on this planet. These successes have led some scientists to proclaim that the 'End of Science' is near or the final victory – 'Theory of Everything' is within reach in the near future. However, the apparent overconfidence and optimism based on the material successes alone have been afflicted with some very serious and as yet unexplained singularities and paradoxes [1] in the flagship theories of science that are unable to explain the vast majority (96%) of the universe. One of the most serious outcomes of this deficiency is the predicted purposelessness of the universe and life in it, thus

making science and scientific laws meaningless. Such a conclusion of modern science is in direct conflict with the common human experience of the extraordinary order and self-emergence underlying the evolution of the universe. The root cause is shown to be the fact that the mainstream scientific approach has ignored spontaneity or consciousness and its theories are founded on the fundamentality of inanimate matter and forces. The higher level purpose of the living (conscious) system is lost during this lower level fragmentation into inanimate pieces. Similarly, the universe becomes meaningless when broken into many fragmented systems of inanimate mindless random particles.

To understand the true nature of the universe and its purpose, one must understand the dimensions of the purpose itself. An unconscious or inanimate matter itself can be useful in solving some worldly need or purpose of a conscious being, but it cannot have a purpose of its own because of the lack of a free will or consciousness. The inanimate matter cannot have a purpose or meaning because it cannot act on its own behalf or have a self-induced motivation (or motion) to affect a change in its own state of being. A purpose is always affiliated with a conscious entity or phenomenon. Hence, to understand the purpose of the universe and life in it, one must realize that the universe consists of conscious beings and hence is conscious. The widely known biological consciousness is only a limited manifestation of the universal consciousness since inanimate brain matter cannot generate consciousness or spontaneous behavior. Any model of the biological consciousness cannot be universal since the biological life is limited to the planet earth only. Hence, to develop a universal understanding of consciousness and purpose a comprehensive and integrated model of matter, mind, and consciousness is necessary that explains both the inanimate and conscious universe. The universe is not just a collection of inanimate matter in the form of particles, atoms, planets, stars, and galaxies. There is an abundance of scientific evidence pointing to the spontaneity or consciousness in the universe. The well-studied physical phenomena of the spontaneous birth/decay of particles, wave-particle duality, spontaneous or self induced motion of the universe expansion, and the universal non-causal presence of the eternal physical laws provide the scientific evidence of consciousness in the universe. Furthermore, the presence of conscious beings and the prevailing cosmic order are not possible in a universe that is not conscious.

The purpose of the primate life as propagated by science, specifically the theory of evolution, is to survive longer by overcoming threats to life by predators and adaptations to challenges posed by hostile environments. Fight for survival and survival of the fittest are key aspects of the evolution theory. The purpose of human life, beyond the mere prolongation of primate life or survival by evolution, is perceived by some as the fulfillment of material, social, and cultural needs as well as desires for acquisition of material things such as wealth, property, a position of power, or fame to establish superiority over others. A still higher level of purpose is the realization of the ultimate truth or reality encompassing both the manifested and unmanifested reality, which is beyond the clutches of space, time, and evolution. Obviously, such a purpose is not achievable thru the biological evolution alone, but can only be achieved through the enhanced consciousness or awareness of the human mind to uncover deepest mysteries of the universe. The power of such a higher-level purpose lies in that it represents the ultimate evolution of not only the physical body/brain but also the human mind to the state of the fundamental universal consciousness, wherein the survival transcends into revival and a mere prolongation of the material life transcends into the realization of the ultimate survival in the fundamental eternity of consciousness.

INTEGRATION OF THE MISSING SCIENCE OF SPONTANEITY OR CONSCIOUSNESS

My answer to the question put forward by my son continued to disturb me deep inside and I began searching desperately to find an answer. The feeling of vacuum or emptiness inside me kept pushing me to become a seeker of reality and a researcher to dig deeper into physics and philosophy to find some clues to what governs the dynamics of spontaneity in nature. My deep thirst for searching the purpose in the universe provided me a great challenge as well as opportunity as a scientist to advance the frontiers of science beyond the inanimate matter. I did not hesitate to think outside of the box and venture beyond the

fixed boundary walls of the well-established mainstream scientific method. A turning point in my understanding was the book [2] by Roger Penrose. I began to believe that the secret of the inner workings of consciousness was hidden in the physics that governs the behavior of the small. I began to focus on developing an understanding of the inner workings of quantum mechanics to unravel its well-known weirdness. Since I wanted to keep my approach simple and comprehensible, I started to look deeper into the theory of relativity for possible headways to unravel the mysteries of both the small below the quantum and the large scale dark energy fueling the accelerating expansion of the universe.

Since the existing scientific theories deal with the inanimate matter alone, they are incapable of addressing physical mechanism governing human thought, intentions, creativity, free will and hence the purpose in the universe. My biggest challenge was how to achieve such integration. Consciousness is often characterized by many a scientists as the 'Ghost in the Atom' and considered to be outside the realms of physical sciences. Or, worse yet, it is often assumed that existing laws predetermine the outcome of even the animate or conscious behavior and there is nothing like free will that exists.

My efforts were propelled by my strong belief that a science that leads to a purposeless universe is a purposeless science. Further, if the ultimate universal reality is one then the scientific reality must converge with the humanly experienced reality. I ventured beyond the presumed belief that consciousness is founded in the biological brain and free will/purpose are outside the domain of science. My endeavor was founded in my confidence in the power of a wholesome science to reveal the ultimate reality and purpose. The power of integrating consciousness into science comes from the wholesome view of reality in all its domains including the material (measurable) and non-material (immeasurable but predictable). The non-material domain here does not mean the super natural, but well-known natural and observed phenomena occurring at below Planck's scale that are comprehensible to human mind. The so-called dark energy causing the observed accelerating expansion of the universe is one example of such a non-material and scientifically acceptable natural physical phenomenon. The definition of the consciousness in this paper refers to the scientifically observed spontaneity in the universal phenomena, and not to a super natural "Ghost" in the atom. The consciousness is not an epiphenomenon but a scientifically observed physical phenomenon of spontaneous mass to/from energy conversion allowing their complimentarity or co-existence.

In order to integrate consciousness into a physical model of the universe, consciousness is defined as the physical dimension or property that allows a system to induce a change to its own mass-energy (kinetic or thermodynamic) state without an external agency. It is hypothesized that the consciousness or self-induced motivation capability inherent in living systems allows them to efficiently organize their simplest components with the intricate aims of survival, reproduction, and other biological ends employing panoply of physical effects to accomplish many conscious or free-willed chosen goals. The physics of consciousness provides a foundation for the spontaneous mass-energy conversion or complimentary wave-particle states as depicted by mass-energy equivalence principle. Such consciousness is physically synonymous with the inherent spontaneity (non-causal) observed in the naturally occurring phenomena such as the spontaneous expansion of the universe, spontaneous birth/decay of particles, and functioning of the biological mind that provides spontaneous self-motivation capabilities to biological life forms. This hypothesis is tested against the observed universe behavior and further testable via proposed future empirical observations.

RESULTS OF THE INTEGRATED SCIENTIFIC APPROACH

A detailed scientific thesis including the proposed mathematical model and results is documented in the form of a book [3]. Specific details of the model are also included in references [4, 5, 6, & 7] and summarized in the Appendix. The proposed mathematical model integrates the physics of spontaneous decay of mass within a simplified form of general relativity. It provides quasi-static or time-invariant

mass-energy field equations that predict the observed galaxy and universe expansions. It provides a fresh perspective on the misconceived birth and evolution of the universe, especially the creation and dilation of matter. It eliminates singularities in existing theories and the need for many incredible and unverifiable assumptions including the superluminous inflation, dark energy, dark matter, multiple universes, multiple dimensions, and quantum gravity.

Using relativistic formulations of the universe as a spontaneously decaying/forming mass with rest mass M_o , the following Universal Relativity Model (URM) equation (1) is obtained for its relativistic mass m as a function of the universe radius R including the effects of gravity. Λ represents Einstein's Cosmological constant, G is gravitation constant, and C is the speed of light.

$$m = \frac{5RC^2}{6G}\left[\sqrt{\left\{\left(1+\frac{\Lambda R^2}{6}\right)^2 + \frac{12GM_o}{5RC^2}\right\}} - \left(1+\frac{\Lambda R^2}{6}\right)\right] \qquad (1)$$

Equation (2) below describes the time-invariant or quasi-static Relativistic Universe Expansion (RUE) model as an alternative to the Linear Hubble (LHM) model, V=HR in the standard Big Bang Model (BBM). It should be noted that for the range of observed galactic distances (up to approximately 5 to 9 billion light-years) wherein the LHM is seen to hold, the RUE eqn. (2) matches the predictions of the LHM, as shown in Figure 1. For values of R larger than approximately 14 billion light-years, the expansion velocity calculated by the Linear Hubble model (LHM) exceeds the velocity of light C and hence, violates the theory of relativity. The velocity predicted by RUE, on the other hand, approaches the speed of light C asymptotically as R increases indefinitely. Since the RUE predicted V never exceeds C, it never violates relativity theory.

$$\frac{V}{C} = \sqrt{1-\left\{1/\left(1+\frac{H^2R^2}{2C^2}\right)\right\}^2} \qquad (2)$$

URM predicted mass, space, and time dilations versus V/C are shown in Figure 2.

Figure 1: LHM and RUE predicted velocity ratios.

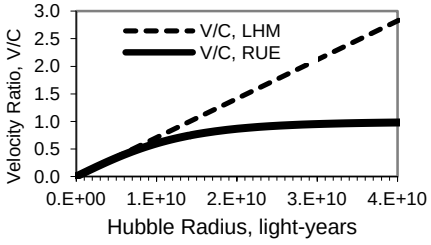
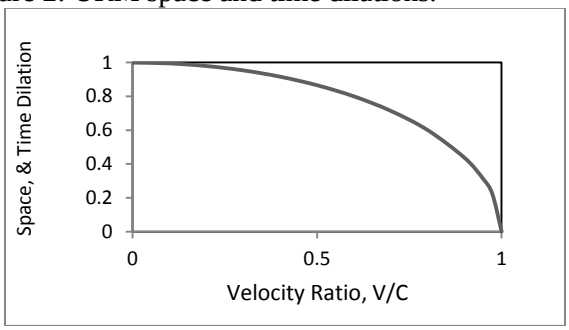


Figure 2: URM space and time dilations.



URM Solves the Dark Energy Puzzle as shown in Figure 3, which depicts the predicted fractional mass energy (mC^2), gravitational potential energy (GPE), and relativistic kinetic energy (RKE) for a range of universe sizes. The sum of the three energies remains constant at M_0C^2. During the early universe up to about 2 billion light-years, GPE dominates. At about 9 billion light-years, the GPE and KE even out. Following this period, the increasing KE, commonly referred to as dark energy or vacuum energy, dominates fueling the non-linear relativistic universe expansion, which eludes us as the apparent accelerated expansion as opposed to the linear Hubble expansion. URM thus resolves the puzzle of the

elusive dark energy or vacuum energy paralyzing modern physics and cosmology. There is no singularity (Big Bang) as R approaches zero since mass also tends to zero.

Figure 3: URM predicted fractional mass energy, gravitational potential energy, and kinetic energy.

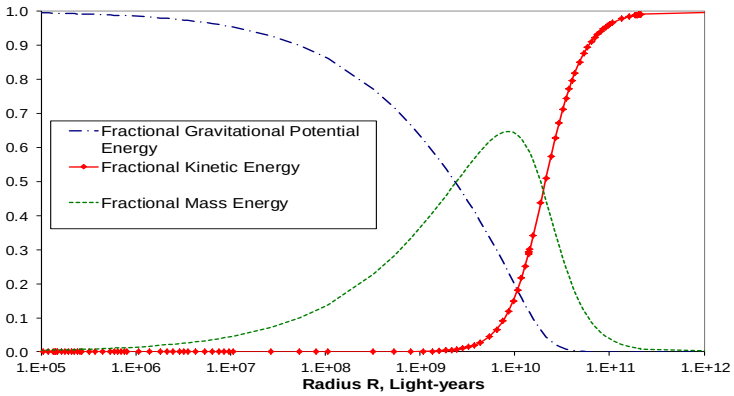
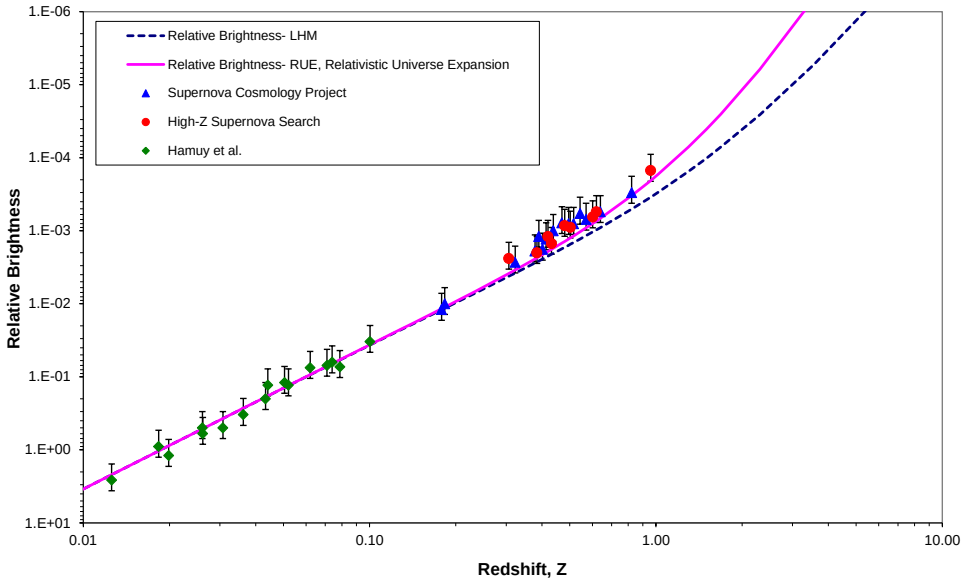


Figure 4 shows comparison of the supernova [8 & 9] and other near-field [10] data against the predicted relative brightness for LHM versus RUE. A good agreement is seen between the predictions of the RUE and the measured values. The LHM under-predicts the trend of the observed data beyond Z=0.4, indicating that it does not accurately account for the relativistic effects that are dominant at large R or redshift values. The relativistic universe expansion eludes us as an accelerated expansion, which in reality is only an artifact of the erroneous linearity imposed by over extrapolation of LHM at large radii. Hence, the supernova data vindicates the RUE model predictions.

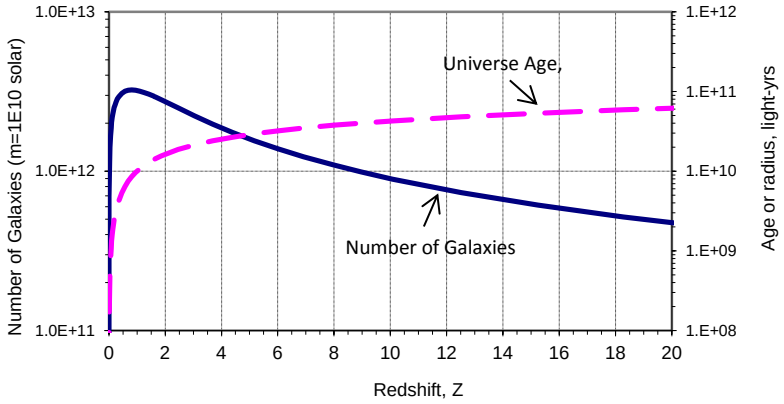
Figure 4: Comparison of LHM and RUE predictions of Supernova and near field data.



The model is also vindicated by recent observations of mature galaxies in the far-field or very early universe. As of 2012, there were about 50 possible objects or mature galaxies z = 8 or farther, and another

100 z = 7 candidates, ranging up to 13.39 billion light year away, based on photometric redshift estimates released by the Hubble eXtreme Deep Field (XDF) project from observations made between mid-2002 and December 2012 [11]. The model also predicts the results of a recent study [12] that shows the total number of galaxies in the universe up to z=8 is about two trillion, almost a factor of ten higher than would be seen in an all sky survey at Hubble Ultra-Deep Field depth. The model predictions extend much beyond the 14 billions years, the current age of the universe predicted by the standard model limited by the linear Hubble model. Based on an average galaxy size of 1010 solar mass, the UR predicted total number of galaxies up to z = 8 falls between the maximum of 3.2x1012 x and minimum of 1.1 x1012 which is in close agreement with the published results, maximum of 2.7 x1012 and minimum of 1.4 x1012, in reference [12]. The predicted results also support other conclusions of the study that the number of galaxies decreases with time after the initial birthing at z < 1 and the possibility of large number of undetected galaxies existing at higher redshifts z > 12 as shown in Figure 5. **These UR predictions are further testable via future observations of mature galaxies in the still unexplored far-field universe beyond 14 billion light-years as the cosmological observational capabilities improve in the near future.**

Fig. 5: Evolution of number of galaxies (mass = 1E10 Solar) and universe Age vs. Redshift Z



A NEW PERSPECTIVE ON UNIVERSAL REALITY

URM equation (1) represents the universal reality as a time-invariant or quasi-static continuum field of various mass/energy/space/time states of the universe as a function of size R or velocity potential expressed by ratio V/C. Since the universe, on a large scale, is known to be homogeneous and isotropic, the Relativistic Expansion represented by eqn. (2) holds true for any observer anywhere in the universe, and hence there is no center or edge of the universe nor there is any direction of time such as the beginning or time evolution as of the universe. Hence, space is not exactly expanding or galaxies are not really moving in a fixed space and time. This eliminates the current paradoxical questions such as to what the universe is expanding into and what was there before the Big Bang. The redshifts and Hubble velocities can be predicted quasi-statically without any time-variant expansion of space and without any explicit consideration of time in the model. No mass-energy is ever lost; it simply gets redistributed in the form of mass, gravitational, or kinetic energy during various relativistic states. URM also predicts an asymptotic Zero-point state at V=C, wherein mass, distance or form (not space), and time are fully dilated and pure relativistic kinetic energy, commonly known as dark energy, fills in the entire universe. URM depicts a wholesome and congruent continuum of all matter/energy/space/time states extending from near-field (V=0, R=0) to far-field (V=C, R~ ∞) universe. Near-field states at small V (V/C <<1) and R are primarily matter/gravity dominated while the far-field (V/C~1 or large R) states are anti-gravity or

cosmological constant (kinetic energy) dominated as shown in Figure 2. Each of these multiple parallel states (commonly known as parallel sub-universes) has its own specific space-time and clock; there is no one unique universal clock that denotes unique universal beginning, current or ending times. The above predictions of the universe behavior are alternative to the widely known Big Bang standard model that describes the universe beginning at the absolute zero time moment and expanding in real finite time with a time variant evolution leading to a finite age of 14 billion light years following a unique universal clock. The so-called Big Bang is a singularity at time zero, but URM predicted universe has no singularity. As described in ref. [3] and appendix, URM also explains inner workings of quantum mechanics.

URM OFFERS A FOUNDATION FOR A THEORY OF CONSCIOUSNESS & PURPOSE

Since the human mind is an intermediary between the observations (recorded by the brain) and conscious experiences of the physical world, it is imperative to understand the physical basis of the mind for a complete understanding of the nature of consciousness. The well-known physicist Freeman Dyson during an interview with meaningoflife.tv alluded to the evidence of three levels of mind - the human mind, the mind residing at the micro level the atomic subatomic level, and then at the very macro levels the mind of the universe. Dyson states: "Well simply that it seems to make choices…. the fact is that you have an atom of uranium; it sits there on the table and then tomorrow it's gone; it's decayed….. So the atom seems to have a freedom to choose, that's something, which characterizes quantum processes that they seem to just occur spontaneously. We call that spontaneous decay. So it is spontaneous; ……this freedom that the individual atom has to have…. seems to be an indication of some rudimentary form of mind." Thoughts in a contemplative or meditative human mind can be compared to the quantum particles that can decay or be born at the free will of the person. This provides a common basis for the human mind and the micro-mind suggested by Dyson. Further, since the empty space in the universe is filled with particles that are born and decayed instantly at their free will (non-causal), the argument of similarity between the human mind and the micro-mind can be extended to the macro- or the universal mind. In a New York Times article [13], Brian Greene enumerates this fact elegantly by describing how our conscious moment-by-moment activities are governed by the physics of mass-energy equivalence described by Einstein's special relativity theory: "… When you drive your car, $E = mc^2$ is at work…..When you use your MP3 player, $E = mc^2$ is at work…… As you read this text, $E = mc^2$ is at work. The processes in the eye and brain, underlying perception and thought, rely on chemical reactions that interchange mass and energy, once again in accord with Einstein's formula."

Using the above arguments, it is apparent that URM formulations represent an integrated model of the spontaneous mass-energy-space-time conversion or equivalence that also governs the physical mechanism of consciousness unifying the three kinds of minds stated by Dyson – human observer's mind, micro-mind at the quantum scale, and the macro-mind at the universal scale. It closely complements as well as enhances understanding of the wholesome continuum of the matter, mind, and consciousness beyond the mechanism underlying conscious quantum systems developed by Keppler [14]. Based on the hypothesis that the full range of phenomenal qualities is built into the frequency spectrum of a ubiquitous zero-point field (ZPF) Keppler forwarded a quantum model as a promising candidate that is qualified for playing the dual role as both the carrier of energy and consciousness. It proceeds on the assumption that conscious systems employ a universal mechanism by means of which they are able to extract phenomenal nuances selectively from this field. This dynamic coupling mechanism is presumed to be a unique feature of quantum systems, suggesting that the dividing line between conscious and non-conscious systems is defined by the differentiation between quantum systems and classical systems. It is further posited that a natural measure for the level of consciousness of a state is the degree of coupling or order in the local ZPF compared to the completely disordered field, or expressed differently, the information gain of the corresponding ZPF information state compared to the disordered initial state.

The Zero Point State (ZPS) depicted by URM is the wholesome un-manifested (fully-dilated mass, space, and time) kinetic energy (commonly known as Dark Energy) state at V=C that is all-inclusive of all the possible manifested mass/energy/space/time states at V<C. This is in contrast to the ZPF of the quantum model that consists of the full range of phenomenal qualities built into its frequency spectrum. Since the vacuum energy of the quantum ZPF (vacuum) is roughly 120 orders of bigger than the cosmological constant predicted dark energy, the ZPS of URM represents the fundamental reference state of the universal consciousness. Just like the level of consciousness of a quantum system is determined by the degree of coupling or order in the local ZPF compared to the completely disordered field, the degree or level of consciousness of a given observer is represented by the coupling or overlap between the range of the velocity V of the observer's frame of reference and ZPS, which also correlates to the corresponding range of the radius R given by eqn. (2) representing the human observer's domain of awareness. The ZPS state thus represents absolute (no relativity) or full consciousness at V=C and R tending to ∞. It also represents the unmanifested zero-entropy and expansive domain of the eternal (living) universal laws depicting the fundamental universal awareness.

While the quantum model entails a discrete boundary between the classical (unconscious) and quantum (conscious) system, URM depicts a wholesome and congruent continuum of all matter/mind/consciousness states extending from unconsciousness (V=0, R=0) to full consciousness (V=C, R~ ∞). Lower level consciousness states at small V (V/C <<1) and R are primarily matter/gravity dominated while the higher level (V/C~1 or large R) states are anti-gravity or cosmological constant (kinetic energy) dominated as shown in Figure 2. Further various levels of consciousness states are complimentary, coexistent, or equivalent transcendent states and not evolutionary states evolving in a fixed space/time. Human mind thus represents a small subset or replica of the universal mind or consciousness. Electrical activity emanating from the brain is displayed in the form of brainwaves that are measurable. The ongoing and future neuroscience research may be able to establish direct correlation between the measured electrical activity and level of consciousness predicted by the theoretical models.

An intelligent living system or human observer is capable of intentionally transcending from one level of consciousness to another just as a self-decaying transcends its mass-energy levels. An inanimate system does not have this capability. Transcendence or phase change from one level of consciousness to another (V_1 to V_2) is self-motivated by the observer via spontaneous mass-energy conversion within its mind/qualia states. However, within a given state of low consciousness there exists corresponding finite mass/energy/space/time that governs its evolution in time. The transcendence from a lower to higher level of consciousness leads to lower entropy state while evolution within a fixed consciousness level leads to increasing entropy, complexity, uncertainty, and chaos with the arrow of increasing time.

URM INTEGRATES PURPOSE AND MEANING INTO SCIENCE

Now coming to the theme –"Wandering towards a Goal – How can mindless mathematical laws give rise to aims and intentions?" As demonstrated by URM above, the mathematical laws are not mindless but the fundamental foundation of mind, eternal consciousness, or cosmic awareness represented by the ZPS. Einstein was right when he said –"I want to know God's thoughts" in developing theory of relativity. The level of purpose is associated with the level of consciousness or awareness of the mind. Nature and its laws offer choices to the living beings to choose reality and goals. Qualia, goal, purpose, and intentions represent various mass/energy/space/time states of the mind that are limited manifestations of the universal consciousness subject to the limits of the awareness of the mind. Mind represents a bridge between body (matter) and consciousness. Thus URM provides a potential explanation to the so-called "Hard Problem of Consciousness". URM demonstrates the ultimate highest level purpose and meaning in the universe in its eternity, non-locality, wholeness, certainty and implicate order at the most fundamental level of reality of absolute consciousness or ZPS state. The realizations that the universe is not born out of nothing and it is not merely going to disappear into the oblivion, and that the universe is an eternal

cosmos with order and not chaos enforce its very purpose and meaningfulness. Eternity means the ultimate survival transcending time and evolutionary struggles. Human mind is demonstrated by some enlightened beings to be capable of realizing this state due to the scientifically demonstrated plasticity of the human brain.

The manifested universe at lower levels of consciousness in various forms of biological and primate life are motivated by the same universal consciousness and laws but limited via their classical bodily forms (in fixed space-time) to the process of biological evolution resulting in its inherent purpose of minimizing energy and maximizing entropy ending in certain death. Mortality and not eternity is the ultimate destiny of the biological life. Genes and primates are selfish because their awareness is confined to body and limited to immediate environment respectively. At still further lower material level of consciousness, inanimate classical objects, planets, stars and galaxies do not seem to have a purpose of their own other than providing an objective measurable evidence to enable human beings to realize the higher level purpose.

Evolution and transcendence are two orthogonal manifestations of and powered by the underlying fundamental universal consciousness. The arrow of evolution or time is towards increasing entropy, disorder, and complexity, while the arrow of transcendence is towards elevating to higher level of consciousness or awareness, cosmic order, and zero entropy. The ultimate purpose of any living system is to achieve full consciousness, however, bodily, brain, material, and sensory limitations constrain and mold the actual goals to be confined within the boundaries of limited awareness (R). For an example, primates are aware only of the immediate environment; hence their goals are focused or limited to survive the challenges from predators and local environment. Primate goals of reproduction are also powered by their limited level of consciousness to achieve continuity and longevity of species. Similarly, the evolutionary features of information processing, computation, learning, complexity thresholds, and/or departures from equilibrium arise from the fundamental motivating power of the consciousness. Even, human beings with limited material worldly awareness are limited to their actions to overcome survival and evolutionary challenges to achieve goals of worldly successes. Rarely a human being is aware and utilizes its full potential capability to transcend to the cosmic consciousness. Evolution is of the body/brain, transcendence is of the mind. URM shows that the goal-oriented behavior is a physical or cosmic phenomenon and not an accident or an imperative.

The level of intelligence is directly related to the level of consciousness. Intelligence represents capability of a living system to collect, process, and gainfully utilize information to achieve its intentions and goals according to their consciousness level. Causality or cause-effect phenomena apply to classical systems that have well-defined boundaries of form in space-time. Force (cause) exerted by an external agency can act on a classical object with boundaries to cause a change of state or motion. Hence, causality is dominant in matter/gravity or near-field universe at very low levels of consciousness. Conscious or living systems may impact the outcome or effect of an external cause utilizing their conscious intentions to redistribute the flow of energy. In this sense, conscious or living systems propelled by consciousness may behave teleologically (purpose driven) rather than causally. The URM model also unfolds the following universal realities and their apparent purposes:

- Consciousness or spontaneity in nature provides transcendence and phase-transition mechanism to achieve equivalence or complimentarity in physical phenomena.
- Relativity, and not uncertainty, rules the manifested universe wherein all things and phenomena are connected in spite of their apparently different form, location and time.
- Non-locality, and not locality, is prevalent in the universe with no censorship from God in making parts of the universe incomprehensible to a fully conscious human being.

- Simplicity and beauty, and not the complexity and uncertainty, are the dominant characteristics of the universe for human beings to enjoy and cherish.
- Time and evolution represent relative realities of matter and primates respectively, with an apparent purpose to propel them towards eternity via transformation (en-lighten-ment) of matter into energy or enlightenment of the primate mind to a higher level of consciousness.
- There is only one single whole universe, which encompasses multiple states (sub-universes) representing various relativistic (matter-energy-space-time) states of the one whole Zero-point energy. The so-called nothingness or vacuum actually represents the wholesomeness or everything-ness of the ZPS of consciousness. Consciousness is not the *Ghost in the atom* [15] as claimed by the reductionist science. In reality it is the *Host in the atom* and in the empty space, without which no creation is possible.

In summary, I am indebted to my son asking the question of science's capability to address life and purpose. The fifteen year's journey that followed has been an enlightening and wondrous experience of my life. This has reinforced my belief in the power of science to reveal the eternal reality and bring purpose and meaning to life beyond the material world. Now, whenever I hear someone saying that science has nothing to do with purpose and meaning, I am filled with compassion knowing what he/she is missing. I have also realized that there are no boundaries between genuine science and genuine spirituality; it is all One Wholesome continuum of the fundamental reality of consciousness beneath the manifested material world. Now, I understand the scientific meaning of God without resorting to the dogmatic belief. And last but not the least; I have now realized that God is not a particle.

REFERENCES

[1] M. S. Turner, *Absurd Universe*, Astronomy Special Cosmology Issue, 8, Nov 2004.
[2] Roger Penrose et. al.,*The Large, the Small and the Human Mind*, Cambridge University Press, Reprinted 1999.
[3] A. Singh, The Hidden Factor: *An Approach for Resolving Paradoxes of Science, Cosmology and Universal Reality*, AuthorHouse, 2003.
[4] A. Singh, *A Solution to the Cosmological Constant, Dark Matter, and Dark Energy Problems, Journal of Physics Essays, Vol. 20 No. 3*.
[5] A. Singh, *A New Theory of Spontaneous Decay Resolves Paradoxes of General Relativity, Quantum Mechanics, and Cosmology*, The XXII Texas Symposium on Relativistic Astrophysics, Stanford University, CA 2004.
[6] A. Singh, *Quantum Non-Locality Explained by Theory of Relativity*, Phy. Essays Vol. 19 No. 1, 2007.
[7] A. Singh, From "Absurd" to "Elegant" Universe, published in FQXi Essay Contest: "Questioning the Foundations: Which of Our Basic Physical Assumptions are wrong?" June, 2012.
(http://fqxi.org/community/forum/topic/1317/)
[8] S. Perlmutter, *Supernova, Dark Energy, and the Accelerating Universe*, Physics Today, 53 (April 2003).
[9] A. Riess et al., Astron. J. 116, 1009 (1998).
[10] M. Hamuy et al., Astron. J. 106, 2392; and 1995 Astron. J. 109, 1 (1993).
[11] https://en.wikipedia.org/wiki/List_of_the_most_distant_astronomical_objects#cite_note-GN-z11-39.
[12] Christopher J. Conselice, Aaron Wilkinson, Kenneth Duncan1, and Alice Mortlock2, *The Evolution of Galaxy Number Density at z < 8 and its implication*, The Astrophysical Journal, Volume 830, Number 2, October 14, 2016.
[13] B. Greene, *That Famous Equation and You*, New York Times, nytimes.com, September 30, 2005.
[14] J. Keppler, *On the Universal Mechanism Underlying Conscious Systems and the Foundations for a Theory of Consciousness*, Open Journal of Philosophy, 2016, 6, 346-367.
[15] P. Davies and J. Brown, *The Ghost in the Atom*, Cambridge University Press, 1997.

APPENDIX

The "Absurd Universe" as described by Michael Turner [1] represents the consensus characterization of the controversial Big Bang and Standard Model cosmology. The mission of science to achieve a unified theory is founded on the basic premise that there exists a single universe and one set of universal laws that govern the observed universe. This mission is marred by the uncertainty and confusion of the multi-verse predicted by quantum theory that presumes parallel universes with their own varying sets of laws. In spite of their demonstrated successes, the two leading theories - general relativity and quantum mechanics, have been unable to explain 96% of the universe presumably comprised of the unknown dark energy and dark matter. Hence, their one wholesome universality remains only a dream at this time. While general relativity theory suffers from black hole singularities and locality limitations of the constant speed of light, quantum mechanics remains a puzzle due to its well-known weirdness and a serious lack of understandings of its inner working including the quantum gravity. In spite of several alternate cosmological theories, there remains a serious lack of a cohesive theory that resolves the so-called cosmic conundrum entailing many unexplained paradoxes and inconsistencies.

The root cause of widely known controversies is the missing physics of consciousness from the widely accepted physics and cosmology theories. Consistent answers to some key fundamental questions are yet to be found. It is conceivable that the universe extends far beyond the visible and measurable limits of the modern science. This may require facing up to the challenge of opening the theoretical frontiers of science to what is beyond the existing measurement capabilities of the current instruments and what is "beyond-the-cause-effect" in order to fully reveal the ultimate universal reality. It is hard to deny the humanly experienced free-willed or spontaneous physical existence of the universe and its eternal laws. If that is true, how could the physical description of the universe be complete without a mathematical treatise of spontaneity or consciousness into any universal theories? The spontaneous decay of particles, their spontaneous (wave-particle) behavior both as matter or energy waves, and spontaneous acceleration of photons emanating from a stationary surface to the near speed of light without any external stimuli are further examples of the existence of the spontaneity as a universal physical phenomenon. The observed flow of time signifies spontaneous changes occurring in the universe without any known external stimuli driving it. There are no known fundamental physical mechanisms for spontaneous creation or dilation of matter, which governs the fundamental birth and existence of the universe. In fact, there is no physics to explain the origination of first motion in the universe. The so called Big Bang is only an implied "Origin of Motion" based on the so-called expanding universe implied by Hubble observations. What (physical mechanism?) governs the conditions that allowed the birth of the universe and its spontaneous expansion is an unknown. Similarly, the root cause mechanism that allows the observed spontaneous physical phenomena as well as weirdness of quantum mechanics remains so far unknown and unaddressed.

The work published [3,4,5, 6, and 7] by the author shows that the root cause of the black hole singularity experienced by General Relativity (GR) is the missing physics of spontaneous conversion of mass to energy and vice versa representing the equivalence of mass and energy. When large amount of mass is pulled in by gravity attraction force into a small volume it results into a very high density. As the volume becomes smaller and smaller, the density tends to increase to infinity leading to the singularity. Including the missing physics of the spontaneous transformation of matter to radiative energy into a simplified universal general relativity model eliminates this singularity. The integrated model also explains the observed rotational velocities of stars in galaxies without the need for the mysterious and illusory dark matter. The Cosmological Constant is known as "Einstein's Biggest Blunder" because he introduced this into his relativity theory as an extraneous anti-gravity constant to counter gravity to allow a static (time-invariant or non-expanding) universe. The integrated model also explains dark energy via a new fundamental mechanistic understanding of the Cosmological Constant and time-invariant relativistic universe expanse as an alternative to the widely known linear Hubble expansion as well as apparent accelerating expansion derived from Supernova observations. A new testable Universal Relativity Model

(URM) is proposed that predicts the observed behavior of the universe and galaxies and other observations.

Spontaneous mass-energy conversion representing the equivalence of mass and energy is shown to be the most fundamental universal mechanism explaining the observed far-field or 96% of the universe. The proposed model provides a relativistic physical basis for the inner workings of quantum mechanics eliminating the need for its many incredible and unverifiable predictions including the superluminous inflation, multiple universes, multiple dimensions, and quantum gravity. It also predicts the limits of the observed quantum and classical behaviors. URM provides some consistent answers to many key fundamental questions such as the following:

• What governs the stability of classical masses and quantum particles?
• What governs the quantum versus classic behavior and the inner workings of quantum mechanics?
• Is Heisenberg Uncertainty a fundamental property of the universe or a measurement induced feature?
• What leads to Non-locality or Spooky Action-at-distance?
• How to explain wave-particle duality – a new understanding based on spontaneous decay of mass?
• What is photon mass and speed – a new photon model?
• What governs the creation and dilation of matter? Is there anti-matter? Can something (Big Bang) be created out of "Nothing"?
• How to explain Quantum Gravity and Time Paradox?
• What is Quantum Vacuum; what it entails?
• What is the true nature of time and space? Is there a continuum of mass-energy-space-time? How it comes about?
• Could the speed of light be exceeded? What is C? Do the universal constants vary with time?
• Did the universe have a beginning – the Big Bang? Does it have an ending?
• Are there parallel universes?
• Why the cosmological constant is so small as compared to that calculated by quantum mechanics?
• Is there dark matter? Do black holes exist?
• What role the consciousnesses of the observer play in observing and interpreting the physical reality?
• Could a mathematical framework for consciousness be integrated into physics and cosmology theories?
• Could science reveal the ultimate reality and purpose of the universe and life in it? How to bridge the gap between physics and philosophy?

In summary, modern physics and cosmology have not reached a dead end, but merely suffering from missing fundamental physics of consciousness from the well-known mainstream theories. Inclusion of the missing physics of the well-observed physical reality of the spontaneity of mass-energy equivalence is shown to potentially cure their shortcomings/inconsistencies and enhance their predictability of the observed universe. Such inclusion restores simplicity, purpose, and meaning to science and the universe. It also resolves the ongoing conflict between science and religion.