

Complex Space-Time and Complex Quantum Mind—An Unified Platform to Explain the Large, Medium, and Small Scaled Mysteries of Universe and Consciousness

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The large scale universe is full of mystery; the dark matter and dark energy amount to respective 23% and 73% of the total energy of the universe, whereas the rest 4% of the total energy is attributed to the normal material world which can be comprehended by the present science. In the nano-scale quantum world, the EPR (Einstein, Podolsky, and Rosen) paradox and Bells formalism and its experimental tests demonstrated that there is an intrinsic nonlocality present in the quantum world through quantum entanglement which is against the relativity that the information communication between two quanta cannot exceed the speed of light. Even more seriously is the philosophical problem why a deterministic Schrodinger equation describes a particle resulting in a probability interpretation of the particle. In the medium size of the universe, the human brain is mysterious; the human all have consciousness that is the subjective awareness of the inner and outer world which is hard to comprehend in physics; some paranormal phenomena due to the action of the consciousness like finger reading, remote viewing, psychokinesis are even harder to understand. In order to explain these large, medium, and small scale bewildering phenomena in the universe, I proposed two hypotheses in 2014 (Lee, 2014): (1) The real universe is a complex universe consisting of 8 dimensional (8D) space-time. In addition to our familiar 4D real space-time (Yang), there exists another 4D imaginary space-time (Yin) full of consciousness and information websites which are part of the dark matter. (2) When an object is in a quantum state, the imaginary part of its complex wavefunction (or quantum field) represents the consciousness of the object; the content of the consciousness is determined by the space-time geometry of the real part of the complex wavefunction (quantum mind). This hypothesis provides a scientific basis for pan-psychism that everything has a soul but so long as it enters into the quantum state.

Keywords: consciousness, complex spacetime, quantum mind, dark matter, dark energy, quantum entanglement

Introduction

In the year of 2011 the Nobel Physics Prize was awarded to three physicists, S. Perlmutter, B. P. Schmidt, and A. G. Riess, for their contribution to the discovery of accelerating expansion of universe (Riess et al., 1998). This indicates the existence of dark energy which was attributed to the cosmological constant in the general relativity originated from vacuum energy. The dark energy amounts to 73% of the total energy in the universe

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and has the characteristic of repulsion force. In addition, cosmologists have already discovered the dark matter since 1970's by measuring the rotation speed of the arms of the distant spiral galaxies. The dark matter amounts to 23% of the total energy of the universe. The normal material world only amounts to 4% of the total energy of the universe. This indicates that we are far from the true understanding of the large scale real universe.

In the nano-scale quantum world, the EPR (Einstein, Podolsky, and Rosen) paradox and Bells formalism and its experimental tests demonstrated that there is an intrinsic nonlocality present in the quantum world through quantum entanglement which is against the relativity that the information communication between two quanta cannot exceed the speed of light. Even more seriously is the philosophical problem why a deterministic Schrodinger equation describes a particle resulting in a probability interpretation of the particle.

Since 1990 we have repeated the research results of Mainland Chinadone from 1979 on the training of children to develop finger reading and psychokinesis capability. After repeated test of tens of youngsters aged from 9 to 17 years old, it was proved (Lee, Tang, Chen, & Fang, 2002; Sako & Sakakibara, 1997; Wu, Chuang, Lee, Lin, & Chen, 2003) that by just touching a piece of folded paper with fingers, they could "see" the color and shape of the characters and figures drawn on the paper. The emerging sequence of the characters and figures in their brain appears to be parts by parts or as a whole on a screen emerging in their brain (the third eye). After mastering the finger reading skill part of the children can be trained to develop psychokinesis, they can bend the iron wire by mind. I believe the emergence of finger reading and psychokinesis ability is a macroscopic mind-matter unification phenomenon. Surprisingly, when certain special keywords related to Buddhism, Taoism, Confucianism, and Christianity such as "佛" (Buddha), "菩薩" (Bodhisattva), "唵嘛呢叭咪吽" (Xon Ma Ni Bei May Hon), six word mantra "耶穌" (Jesus), "孔子, 老子", or symbols as "卍", Taichi picture, were tested then these youngsters saw the bright light, bright and smiling human image, temple, monk, bright cross gate, shadow of human or heard the sound of laughing, unknown Tibetan and Hebrew terminology related to sacred persons, etc. These responses are completely different from what we have observed previously in over 1,000 tests. According to the experience of those people possessing extraordinary human ability who received information from their inner screen in the brain (the third eye), it is believed that in addition to our four dimensional space-time material world and the known four fundamental space-time, there exists an extra space-time called "information field" or "spiritual world", or "internet universe" which contains high level consciousness without material body and information websites. These discoveries have been confirmed by Yunnan University. These medium sized paranormal human abilities are bewildering.

Complex Space-Time and Complex Quantum Mind (Lee, 2014)

In order to explain these large, medium, and nano-scale bewildering phenomena, I proposed two hypotheses in 2014 (Lee, 2014).

First Hypothesis: The Universe Is an 8 Dimensional Complex Space-Time (Lee, 2014; 2018; Rauscher, Hurtak, & Hurtak, 2018)

The real universe is a complex universe consisting of an 8 dimensional (8D) space-time as proposed by Lee (2018) and Rauscher et al. (2018), and in addition to our well known 4D real space-time (陽 Yang), there exists another 4D imaginary space-time (information field or 陰 Yin) full of consciousness and information websites as shown in Fig. 1. Although the relationship between the real and imaginary space-times is intimate, all belong to the real and imaginary parts of the same complex space-time. However, there exist barriers

between the real and imaginary space-times that cannot be overcome at will. They can exchange energy and information only through enormous special connection points which are the vortex like space-time structure with different size. It is believed that these vortex space-time structures look like the fish eye structure of 3D Taichi picture as shown in Fig. 2. The white and black halves represent the real and imaginary space-times, respectively. They are connected by enormous fish eye tunnels which have vortex structure.

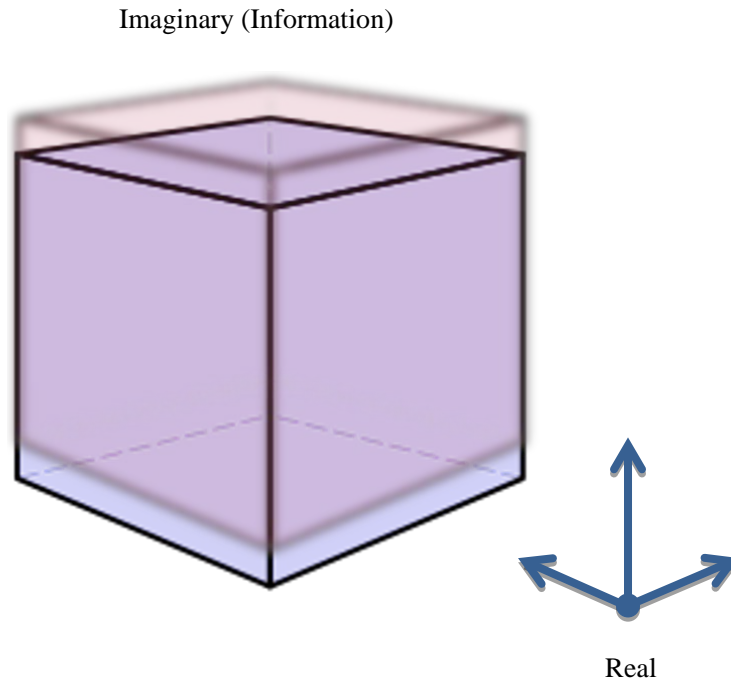


Figure 1. Complex space-time.



Figure 2. Real and imaginary space-times are connected through fish eye structures like 3D Taichi structure.

Where are those vortex space-time tunnels? Russian physicist Buringski (2013) proposed a possibility due to the over-rotating of particle spin which cut a singular ring in the real space-time. Therefore, I proposed that these singular rings around particle spins are the tunnels connecting the real and imaginary space-times.

Unless the size of the material is much smaller than the aperture size of the vortex tunnels or the material enters into a quantum state, the barrier between the real and imaginary space-times cannot be penetrated. The ordinary materials exist in the real space-time; their position and equation of motion are characterized by four coordinates (x, y, z, t) . When the material such as fundamental particles, photons, and objects enter into microscopic or macroscopic quantum states which are described by complex quantum field or material wave, then the material wave or quantum field is able to leak or tunnel through the vortex tunnel and enter into the imaginary space-time. The material wave propagates with a phase velocity U . The product of U and real space-time group velocity v satisfies $Uv = C^2$, where C is the light velocity, when the real space-time velocity of the material $v \leq C$, the imaginary space-time phase velocity of the material wave $U \geq C$. This leads to a quick spread of the material wave or quantum field to a vast space-time and reaches to the past and future. This is the basic physical mechanism responsible for paranormal phenomena.

Since the imaginary space-time is filled with vast amount of spirits and information websites, they all have energies or equivalent mass ($E = mc^2$) which must be part of the dark mass. The real space-time is glued by imaginary space-time through the vortex tunnels of spins. The faster expansion of imaginary space-time may lead to accelerated expansion of real space-time (Riess et al., 1998) and the resultant dark energy that is stored in the imaginary space-time.

Second Hypothesis: The Complex Quantum Mind (Lee, 2014; 2018)

Since the imaginary space-time is filled with consciousness and information websites, it is naturally to assign that the mathematical symbol i in physics is not only a mathematical symbol but represents the consciousness; this assignment immediately solves the mystery of quantum mechanics that Schrodinger wave equation resulted in a complex wavefunction $\Psi(\vec{r}, t)$ that cannot be measured in a physical instrument. Copenhagen interpretation used this complex wavefunction to multiply its complex conjugate wavefunction $\Psi^*(\vec{r}, t)$ to represent the probability of finding the particle in the position r and time t . But it could not explain why a deterministic Schrodinger equation ended up with a probability interpretation. Actually, the imaginary i of the complex wavefunction or quantum field had already brought consciousness into the physical law by Schrodinger, but unfortunately, it was not explained in this way.

However, consciousness is only an abstract concept; awareness experience must have contents, e.g., happy, anger, love, stubborn, memory, logic judgement, computation, action, etc. These contents are determined by the 3D space-time geometry of the real part of the complex wavefunction. In our brain the 3D space-time geometry is the 3D neuron firing pattern or the 3D web structure of the microtubules that enter into quantum states. Therefore, when the microtubules network in the brain enter into quantum state, the awareness (imaginary part) appears; it scans the real part 3D network structure to get the contents; this is the awareness experience, the consciousness.

In fact, the most important event that happens when the matter enters into quantum state is that it can tunnel into imaginary space-time through spin tunnels. The consequence of tunneling into the imaginary space-time is the arousal of the consciousness of the matter. Everything has a soul so long as the object enters into a quantum state. This also provides a scientific basis for the philosophy of pan-protopsyism (Hameroff,

2018) that phenomenal experience (qualia) is a fundamental property of matter. In my opinion, this happens only when the matter enters into quantum state and the imaginary part i appears. The combination problem of qualia: how the myriads of micro qualia combine into full, rich consciousness experience, is also solved, because the real part of the complex wavefunction (3D space-time geometry or neuron firing pattern due to micro tubules) determines the content of consciousness. When the combination of micro quantum states becomes more complicated, the space-time geometry of the real part becomes more complex and the phenomenal experience becomes more complex.

When two strongly correlated quanta are created and entangled, the complex nature of the system enables them to enter into the imaginary space-time with superposition of all possible states. The information communication among them in the imaginary space-time exceeds the velocity of light. Once one of the quanta is measured by an instrument in real space, the whole quantum state is collapsed, leaks back through the vortex channel to real space-time, and shows the quantum entanglement and nonlocality demonstrated by numerous experiments. The imaginary part of the quanta leaking into the imaginary space-time is travelling all around and tends to be scattered by all the imaginary image of matter in the real space-time; this leads to probability interpretation when the quantum state collapses and leaks back to the measuring instrument in the real space-time. This explains why a deterministic Schrodinger equation results in a probability interpretation for the particle.

This model also explains the physical origin of Pauli Exclusion Principle that two electrons with same spins cannot occupy the same spatial orbitals because it creates an unstable space-time structure. When two spin in a chemical bond, one spins up and the other spins down, the space-time is cut into four pieces. How do they reconnect? Burinski (2013) proposed that they are reconnected in a way similar to Mobius strip; the shape is topologically similar to 3D Taichi picture shown in Fig. 2, a very stable space-time geometry.

I also propose that the astronomical fish eye tunnel is revealed in the year of 2013 by the cosmic microwave background announced in the official website of European Space Agency¹. The picture shows the energy distribution in the early universe (380,000 years) after Big Bang. Two Cosmic Microwave Background anomalous features are revealed. One is an asymmetry in the average temperatures on opposite hemispheres of the sky with slightly higher average temperatures in the southern ecliptic hemisphere. There is also a cold spot that extends over a patch of sky. I propose that this cold spot is the remaining fish eye structure of Big Bang birth of the real space-time from imaginary space-time. It is colder than the neighboring region after Big Bang. The southern hemisphere is closer to the ejection opening (cold spot) from imaginary space-time and the temperature is slightly higher than that of the northern hemisphere.

Comments to the “Orch OR” Theory as a Mechanism to Explain Consciousness

The nature of consciousness and the physical mechanism occurs in the brain neurons which was proposed in 1990's and reviewed in 2014 (Hameroff & Penrose, 2014) that consciousness depends on “orchestrated” coherent quantum processes in collections of microtubules within brain neurons; these quantum processes correlate, regulate, evolve with neuron and membrane activities, and terminate in accordance with the specific “Objective Reduction” (OR) of the quantum state. This orchestrated OR activity (“Orch OR”) is taken to result in moment of conscious awareness and/or choice.

¹ Cosmic microwave background 380,000 years after Big Bang measured by Planck satellite of European Space Agency. Retrieved from <http://sci.esa.int/planck/515-ut-hallenging-the-universe-according-to-planck/51-simple-b>.

D. Chalmers (2018) challenges the Quantum Materialism whether the objective collapse “Orch OR” explains what we say about the consciousness. He used a simple two superimposed quantum states to illustrate his point. If two states all want to know “am I conscious?”, then the superposed states will collapse to two but not a single definite state as “Orch OR” theory required. This suggested that the Orch OR theory needs modification to take care why two superimposed states cannot ask the question at the same time.

What I proposed in this paper is that the consciousness appears when the coherent quantum processes occur, but disappear when the “Orch OR” mechanism happens. However, the basis for coherent quantum process supported by microtubules within brain neurons is a ground breaking brilliant concept which opened the way in physics to attack the mysteries of the consciousness which definitely will lead us to the final solution.

The Origin of Paranormal Phenomena

The paranormal phenomena (Irwin, 1999) such as extra sensory perception (ESP), psychokinesis etc., have been studied for more than 130 years in western world. The finger reading phenomena have also been studied for 39 years (Lee et al., 2002; Sako & Sakakibara, 1997; Wu et al., 2003) in China and Taiwan. It was found that the necessary condition for the successful experiments required the targets to open their third eye which looks like a television screen emerging in their brain. It is now believed that the third eye is a special type of quantum phenomenon nothing to do with the normal consciousness based upon the microtubules in the neurons; the consciousness of the third eye tunnels into the imaginary space-time and scans the imaginary image of the words which bypass the normal visual pathway to get all information for vision. Psychokinesis is also operated in the imaginary space-time by the third eye.

Conclusions

In conclusion, the real universe consists of 8D complex space-time; the existence of 4D imaginary space-time provides an unified platform to explain the nano-scale quantum entanglement, large-scale dark matter, dark energy, and medium-scale paranormal phenomena. The most important consequence is that the imaginary i brings the consciousness into the physical law and illustrates the true nature of the mind and consciousness.

References

- Burinski. (2013). *Theoretical and Mathematical Physics*, 177(2), 1492.
- Chalmers, D. (2018). Anything you can do, I can do it Meta. *Proc. 2018. The Science of Consciousness Conf.* April 2-7, Tucson, AZ, USA.
- Hameroff, S. (2018). Quantum pan-protopsyism—A scientific approach to the “hard problem”. *Proc. 2018. The Science of Consciousness Conf.* April 2-7, Tucson, AZ, USA.
- Hameroff, S., & Penrose, R. (2014). Consciousness in the universe: A review of the “Orch OR” theory. *Physics of Life Reviews*, 11, 39-78.
- Irwin, H. J. (1999). *An introduction to parapsychology* (3rd ed.). Jefferson, North Carolina: McFarland & Company.
- Lee, S. C., Tang, D., Chen, C. D., & Fang, S. C. (2002). Finger reading—Exploring the information field. *The International Journal of Healing and Caring*, 2(2), 1-25.
- Lee, S. C. (2014). Complex space-time—An unified platform to explain dark matter, dark energy, consciousness and paranormal phenomena. *Buddhism and Science*, 15(1), 13-28.
- Lee, S. C. (2018). Complex space time and complex quantum mind: An unified platform to explain the mysteries of the universe and consciousness. *Proc. 2018. The Science of Consciousness Conf.* April 2-7, Tucson, AZ, USA.

- Riess, A. G., Filippenko, A. V., Challis, P., Clocchiatti, A., Diercks, A., Garnavich, P. M., ... Tonry, J. (1998). Observational evidence from supernovae for an accelerating universe and a cosmological constant. *Astron. J.*, 116, 1009-1038.
- Rauscher, E., Hurtak, J. J., & Hurtak, D. E. (2018). The nature of reality and consciousness in complex eight space. *Proc. 2018. The Science of Consciousness Conf.* April 2-7, Tucson, AZ, USA.
- Sako, Y., & Sakakibara T. (1997). The influence of the visible light condition of target samples and the subject's awareness of this condition in non-visual color recognition. *J. of Int. Soc. of Life Information Science (ISLIS)*, 15(2), 446-449.
- Wu, C. W., Chuang, K. H., Lee, S. C., Lin, C. P., & Chen, J. H. (2003). Finger reading by using functional magnetic resonance imaging. *Ninth Annual Meeting of the Organization for Human Brain Mapping*. New York, USA.