

Nonlinear Whole Parapsychology and Its Mathematical-Physical Methods



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Abstract

Based on the quantum theory, we first discuss some research of parapsychology, whose experiments indicate possible existence of new other worlds. Panpsychism shows also the existence of mind, psi, etc., except general matter-energy-information. Second, we propose the nonlinear whole parapsychology and its three basic rules. Third, we study some mathematical and physical methods, which include the thought field, quantum parapsychology, etc. Fourth, new spaces of parapsychology and the network model are researched. Fifth, we search a mathematical space with complex manifold-Kahler geometry, which may provide wide perspectives to lucubrate new worlds in parapsychology. Chinese parapsychology can combine rich traditional Chinese culture to display various unique phenomena, but parapsychology must be universal for the world.

Keywords: Parapsychology; Sociology; Quantum; Nonlinearity; Panpsychism; New world.

1. Introduction

An important developing direction of modern social sciences is wide application of various mathematical and physical methods. In modern physics quantum theory is very important method. In quantum sociology the basis is that people is an independent “quantum”, which corresponds to Leibnizian monads. Further, various social structures, organizations, and countries at all levels are different “quantum”, which have fractal with self-similarity, such as for larger and smaller countries. The ‘quantum’ entanglement in the system determines the holism of the system. By using the quantum mind, [Wendt \(2015\)](#) try to unify the physical and social ontology. It will be possibly a new paradigm of the social sciences. But, the some applications of quantum such as sociology have the scale question.

Based on Feynman’s idea ([Feynman et al., 1966](#)) and new form of the Titius-Bode law, we proposed the extensive quantum theory ([Chang, 2002](#)) and its three laws: 1. Extensive quantum is its element in any system. 2. Its theory has similar quantum formulations with different quantum constants H . 3. Evolutions of systems may be continuous, but stable states are quantized. Its mathematical base is fractal ([Chang, 2018](#)). It is applied to many aspects ([Chang, 2014;2018](#)). We researched the nonlinear sociophysics, the nonlinear whole sociology ([Chang, 2023a](#)), and quantum sociology whose base must be the extensive quantum theory and the social individual-wave duality ([Chang, 2015](#)).

In the modern world parapsychology is a frontier science at the intersection of natural and social sciences, which involve modern psychology, sociology, religion and so on. It shows many very mystic phenomena. In this paper, based on the quantum theory we research the quantum parapsychology, and propose the nonlinear whole parapsychology, and discuss some new mathematical-physical methods of parapsychology.

2. Some Research on Parapsychology and Quantum Parapsychology

From 1956, C.T.K. Chari, J.H.M. [Whithman \(1973\)](#), researched quantum physics in parapsychology. In 1975 L. Oteri edited *Quantum Physics and Parapsychology*. American physicist and parapsychologist E.H. ([Walker, 1977;1979a;1979b;1985;1997;2000](#)) researched all the year round the quantum theory of parapsychology.

Since 1995 panpsychism is re-attention the world ([Chalmers, 1996; Seager, 1995; Turausky, 2014](#)). It appears in: 1. The philosophy of physics, especially the role of consciousness in the process of observation, is related to the

ontology of panpsychism. Consciousness is a macroscopic quantum theory (Wendt, 2015). 2. Quantum brain theory. 3. Philosophy of mind. 4. Environmental philosophy, etc (Seager, 2009; Skrbina, 2005; Wendt, 2015). Panpsychism extends to plants, which corresponds to animism.

Gardner (1981) discussed parapsychology and quantum mechanics. Schmidt (1982), researched nature of consciousness related to the foundations of quantum physics. Jahn and Dunne (1986), discussed the quantum mechanics of consciousness, and which is applied to anomalous phenomena. Clarke (2008), researched a new quantum theoretical framework for parapsychology. Roll and Williams (2010), discussed quantum theory, neurobiology, and parapsychology (Pylkkanen, 2007;2018;2020) research mind-matter and the implicate order, and quantum theories of consciousness, and proposed a quantum cure for panphobia.

Parapsychology is on the forefront of scientific research, but certainly draws much debate around the academic world. We cannot accept the blind denial of so-called skeptics. In China, parapsychology is the study of mainly special people and their special functions. It is certain that many phenomena of parapsychology are factual and real (Chang, 2022;2023a). We researched some applications, experimental tests and predictions of parapsychology (Chang, 2004b;2018), for example, transformation among vision and other sensations (Chang, 2013b;2017b), change some microscopic structures and so on.

We propose a special example of these phenomena. Physics is usually assumed that the magnetic field is from the North Pole (N) to the South Pole (S) (Purcell, 1965). But, some people with special functions see N emitted red light, S emitted blue light (Lin and Liu, 1997). According to the general thermodynamic law, the energy and heat go from high to low, so the direction of the magnetic field flow should be from south to north determined by people with special functions. It is just opposite. It is known that early defined the flow direction of the electric field flow is the positive charge, while the actual direction is the opposite direction of electron flow. Both are consistent, and may even be related each other. Human with special functions see visible magnetic pole glow light may be similar to the photoelectric effect or electro-optical effect, emitting photons. Different functions have different photons, and the shorter the wavelength, the greater the energy.

Such parapsychology seems to show that the magnetic field is in the opposite direction. This is unified of electromagnetism, current and magnetic fields, and will be an interesting supplement and correction for physics.

New researches show that it is related to new fifth interactions. Quantum entangled state is namely a new interaction. These are the development of consciousness and mind. Much experiments show existence of two fields: human thought field and outside information fields (Chang, 2020b).

Recently, we presented findings from the 21st-century Chinese research in parapsychology. We reported on the psi potential of blind children and the alleged paranormal abilities of Yang De-Gui, Chen Qui-Shi, and others. We also discussed some key findings presented at three parapsychology conferences at Kunming, China, that suggest psi experimentation can be carried out using scientific instruments. Though the functions of these special people vary with age, most appear stable and repeatable. Chinese parapsychology can be viewed in context with China's rich traditional culture (Chang, 2023b).

We proposed a physical definition of parapsychology that is an invisible unclear field becomes a visible macroscopic effect, which is a measurable, predictable and testable definition (Chang, 2018;2020b). Of course, the definition of parapsychology may use other methods. We must know that parapsychology is not physics, and is more similar to biology, specially, neurobiology, which has specific and individual difference (Chang, 2020b). Modern neurobiology shows that the known nervous system is generally not a completely stable system. Gerald M. Edelman, winner of the 1972 Nobel Prize in Biomedical Science, pointed out, we have repeatedly stressed that one of the most prominent characteristics of each brain is its individuality and variability. This variability exists at all levels of the brain. This is a great challenge to any theory that tries to explain the overall function of the brain (Chang, 2013b). It is so different that every brain is unique, and the brain is not a computer. Some people pursue accurate neural coding, but can not actually find (Edelman G. M., 1987;2000).

For various phenomena of parapsychology, we proposed four biggest possibilities: 1) new interaction; 2) higher dimensional space-time; 3) new many worlds (Chang, 2012b), and 4) it can sense and detect some new information, which show some special functions (Chang, 2020b). These results are related each other. Ordinary people perceive hardly high-dimensional space-time and the new world, but society and the scientific community easier accept new interactions or detection of some new information, such as the thought field. We found in the training potential of blind children and general children, they often share the same "virtual space", and sometimes this kind of space can also be translated into real space, but it is generally difficult to distinguish between the two spaces. It is confirmed only through new interactions, such as the emergence of moving objects in "virtual space".

We proposed three dimensional body-mind-spirit worlds on parapsychology and human society. Yang De-Gui and Chen Qui-Shi, et al., caught pills from air, some observed results imply "ghosts" are probably the existences of a spirit and god above the operators and all living beings. It is probably related to conscious matter proposed by (Eddington, 1939), and is some living or non-living things that can not be detected usual methods, but can be detected by infrared light, etc. It will be a great contribution for world, and is the discovery of a new class of substances. Any observations and detections on mind and spirit worlds and on relations between both and matter are all valuable (Chang, 2020a;2021b). Further, various phenomena and four possible results may be projected on this space, and be classified preliminarily and described by this method. Combining the extensive quantum biology any living things with life and death are all discrete and quantization. According to the tunnel effect of quantum mechanics, soul reincarnation has a probability. According to the quantum entanglement and quantum teleportation, the resurrection of Jesus may be demonstrated and described (Chang, 2021b).

Based on the EPR prediction, the nonlocality and entangled state become the frontline in modern physics. From this we researched some predictions (Chang, 2021c), in which one is existence of the mysterious natural field on the

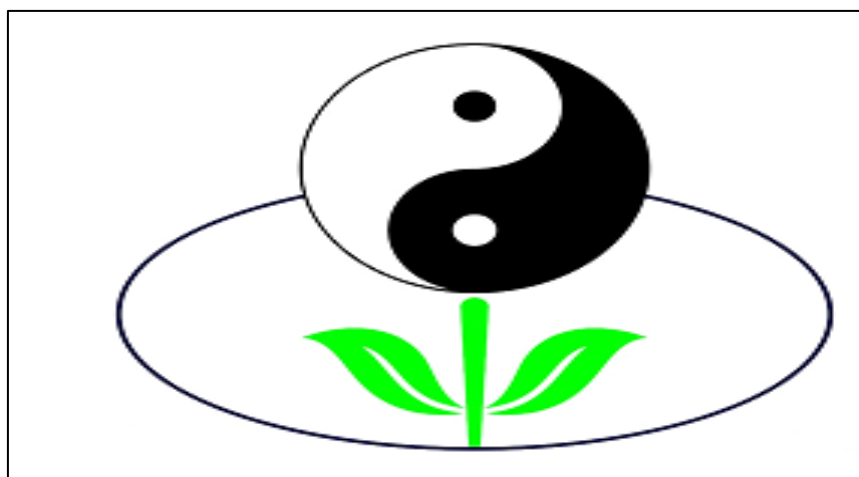
induction between men and nature, or God or the Buddha-fields in body-mind-spirit space (Chang, 2021b). Parapsychology is generally two or three worlds. Only a few functions can be simplified to one dimensional matter world.

Panpsychism shows that except matter-energy-information, world must add mind, psi, etc. This not only corresponds to dualism, and is both aspects unification and the neutral monism, i.e., Chinese traditional Lu-Wang Mind Philosophy (mind=matter).

Many ESP, thought transference, telepathy, PK, clairvoyance, the thought field and change material structure, etc., are all results of interactions between mind and matter. In three dimensional worlds there may show the human-nature induction, the unifying human-nature, precognition, the universal connectedness, reincarnation and external magic, divine power, cosmic power and cosmic information, etc. The thought field can be derived from mind or spirit. Mind can produce some new functions.

Parapsychology should be closely related to quantum biology. Telepathy and telekinesis are the biological quantum entanglement. The quantum parapsychology may prove quantum vitalism, quantum panpsychism, quantum social science, and quantum world view. In quantum vitalism, particle corresponds to matter, and wave corresponds to mind and wave function. The aerial fetch matter is the minded matter. Many phenomena are results of quantum emergence. These include various phenomena unexplained by usual science, for example, telepathy, telekinesis, clairvoyance, precognition, thoughtography, reincarnation, near-death experience and so on.

Now we found Institute of Quantum Parapsychology in China. The most important purpose is to combine modern sciences, in particular, quantum theory to study parapsychology that can be testable and repeated. Our purpose is vividly reflected in the logo, a Tai-Ji diagram of traditional Chinese culture plus an international parapsychology symbol Psi, and modification by green as life.



This shows that we are both based on the Chinese culture and combined with the development of the world. The magical implication is that the Tai-Ji diagram as the complementary principle is also the emblem of Bohr, who is the best-recognized leader of quantum mechanics, and Psi is also a wave function in quantum theory. Of course, we are not reject other complex parapsychological phenomena.

3. Nonlinear Whole Parapsychology and Its Basic Rules

Basis of parapsychology is biology and neurobiology, which has specific and individual difference (Chang, 2020b). Based on the inseparability and correlativity of the biological systems and their most basic features whole and nonlinearity, we proposed the nonlinear whole biology and medicine (Chang, 2012a;2021c). Now we propose the nonlinear whole parapsychology and research its three basic rules:

First rule: Parapsychology as whole is a complex system in science. The inseparability exists always among different aspects and different levels in various phenomena of parapsychology, for example, PK is usually based on ESP.

Second rule: The most parapsychological phenomena must be produced from various interactions. Various special functions can be transformed, and correspond to the Six Sense-organs Intersubstitution on eye-ear-nose-tongue-body-thinking in Buddhism. Their descriptions are necessarily nonlinear mathematics with the interaction terms. Corresponding equations all are nonlinear.

Third rule: Many parapsychological phenomena close connected with the environment, and effects fluctuate by the environment. Usually environments are regarded as boundary conditions of parapsychology, but which and its environment are a whole, and have often various nonlinear relations.

Two main mathematical-physical basic characters of parapsychology are nonlinearity and whole. Three rules are a whole, and are closely related each other. Because of complexity on parapsychology, their description must apply the nonlinear theory. It seems to correspond to a part of the nonlinear whole biology (Chang, 2012a).

4. Some Mathematical-Physical Methods of Parapsychology

Modern science has various rich mathematical-physical tools, they may describe quantitatively or semi-quantitatively a wide variety of worlds. Phenomena and experiments, mechanism and theory of parapsychology are all complex. We proposed four basic scientific characters of complexity: Many elements, various interactions, hierarchies, evolutions, and researched some corresponding mathematical methods of complexity. Complexity is a complex science, but its investigations, developments and applications must be simplification and quantification (Chang, 2021e). For research of parapsychology we may use this method as reference.

First modern physics is quantum theory. Based on modern science and combining quantum theory, we proposed the thought fields (Chang, 1988;2003), whose energy is directly proportional to frequency ν , i.e., $E = H\nu$, where H is an undetermined coefficient, from this four basic functional states may be obtained. It is already an extensive quantum theory. Further, we proposed some experimental tests (Chang, 2004b). New researches shown that the thought field (or the entangled state, which is related to the quantum non-locality) is a type of new fifth interaction, whose action distance is not infinite or very short, and its strength is also middle one (Chang, 2004a;2013c;2014;2016a).

We proposed the quantum parapsychology, and researched some applications, tests and predictions (Chang, 2018). It may combine the thought field and its different developing levels. Parapsychology has the wave-particle duality, whose wavelength $\lambda = h/p$ and frequency $\nu = E/h$ (both unified by $\lambda_\mu = h/p_\mu, k_\mu = p_\mu/h$), period $T = h/E$, and velocity, etc. From this can obtain the thought transference.

Statistical character of parapsychology just illustrates the statistical and integrated interpretation of its quantum theory. We should study its duality, uncertainty relations and their deformation and development. The transformation of Yin-Yang and the human-nature induction all are the macroscopic entanglement. The symbol of parapsychology is Psi (Ψ), which is also the quantum wave function, whose square describes probability. This implies that theory of parapsychology is namely the extensive quantum theory (Chang, 2018).

The quantum parapsychology must connect to part and the whole, and is the unified man and nature. Parapsychology, consciousness and the thought field are interfered during observation and measure, which is the epistemological basis of the quantum parapsychology.

Based on the modern sciences, we researched the seven possible mathematical and physical models on "soul" (Chang, 2021a): Phase transformation theory, the tunnel effect of quantum mechanics, nonlinear wave and soliton, the wormhole model in general relativity (Chang, 2016a), Hawking quantum evaporate theory, the thought field (Chang, 1988;2003;2004b), and quantum entangled state. This is future after death.

Face the COVID-19 and various disasters, we must consider future, in which scientific future and future society should pursue truth, goodness and beauty. The main religions believe in the afterlife, so we discussed the Buddhist outlook on life, especially, the epistemology, methodology and other philosophical thought in *The Sutra of Hui Neng*. These will help to overcome world crises, and welcome a bright future (Chang, 2021a).

The difficulty of PK depends on the mass, size, density, etc. The thought field and the extensive PK may curve the space-time, which correspond to general relativity and its quantized.

Morris, *et al.*, (1988a; 1988b), demonstrated that a stable wormhole as a tool for teaching general relativity can use for interstellar travel, and is a time machine into the past or the future. This is a useful mathematical physics model for the prediction of future cross-over time by the special function in parapsychology. It is known that the wormhole exists in general relativity, and in quantum gravity theory. We combined the wormhole model and extensive relativity (Chang, 1989;2013c), then obtain the extensive wormhole model and corresponding mathematical representations and some quantitative results. The extensive wormhole model provides a modern scientific tool that can be used to describe teleportation, in particular, break-through of spatial obstacles on PK (Chang, 2016a), and cross over the long river of time. Buonomano (2017), searched that brain is a time machine and the neuroscience and physics of time.

5. New Spaces of Parapsychology and Network Model

In 1909 Jakob von Uexkull studied various different livings, and proposed a new idea: All you can see is only a part of the world, called the local (umwelt); and the larger world is the total (umgebung). In fact, what we feel is the local situation (umwelt).

Plato proposed that there are two worlds: the real world and the conceptual world. They correspond to hue and reality, and nature and truth, the latter is namely the new space. It is the psycho-physical, mind-matter, spirit-nature, soul-body dualism. More generally, dualism is a double space. Ancient Greek scholars devoted their minds to rumination, which is very similar to Chinese sit quietly, and both have seen some different phases, and produce easily some parapsychological phenomena (Chang, 2017c). For example, Leucippus and Democritus (460-362 B.C.) proposed atomism, in which only atoms and void are real. Buddha could see multi-worlds and innumerable microbe. Some magical phenomena exist in Buddhist and other religions.

For these new worlds (Moreman, 2008) we first must confirm their existence. Next, we should study their rules, which is probably a world with no mass, no entity and no time (so no speed limit), and only existence of information and energy, such it may probably be associated with a class of dark energy. Third, the relations and interaction between new worlds and the present space should be researched. They may be related to the material world by the new interaction such as the thought field, by the Einstein-Rosen bridge, and wormhole, etc.

In traditional Chinese culture the world between Yin and Yang is entangled state. The new spaces have some strange features, which seem to be different from the usual real existence. The study of multi-space and multi-world has a long history at China and world. In modern science the general relativity and cosmology have many-worlds, from the curvature of space $K < 0$, $K = 0$ and $K > 0$, and the cosmic constant $\Lambda < 0$, $\Lambda = 0$, $0 < \Lambda < \Lambda_E$, $\Lambda = \Lambda_E$ and $\Lambda > \Lambda_E$, there may be classified into the 15 possible cosmic models. They are mainly two types: expansion model and contraction model. The expansion model includes the early de Sitter Universe, the Lemaitre Universe, the Einstein-de Sitter Universe and the famous Big Bang Model. The oscillation model includes the Friedmann Universe, the Tolman Universe, etc.

In modern science quantum physics, particle physics, string theory and cosmology all study multi-Universes. They include the Swiss cheese Universe (Einstein and Straus, 1945) which corresponds to Calabi-Yau manifold (Chang, 2016b), the Godel (1949) rotation Universe, Taub (1951) unified all uniform but not isotropic cosmic models. Bianchi prove these spaces only have 9 types (I-IX), i.e., Bianchi Universe. From this (Taub, 1951) found all types of uniform spaces that correspond to the expanding universe. Moreover, there is the mixmaster universe (Misner, 1969), which is the chaotic expansion. In 1965-1967 K. Thorne and Y. Zeldovich, A. Doroshkevich found a type of new solutions of Einstein field equations, which describe anisotropic universe that includes ordinary matter or radiation, with a large magnetic field on a cosmic scale. We must insist on causality, and believe that I am the only one. This is basically consistent with the view of quantum physicist David Deutsch.

The known Brans-Dicke gravitation theory already includes tensor-scalar two fields. And it may be developed (Barrow, 1996). Based on Bekenstein's investigation, Sandvik, et al., found the similar Brans-Dicke theory, and predicted a simple relation of the variation of fine structure constant with time. There are chaotic inflationary universes (Barrow and Turner, 1982) and eternal inflationary universes. The generalized Einstein theory has a cosmological solution for accelerating expansion, and dark energy exists. Multi-world theory includes M theory. In the simulation universe the great Cosmic Landscape exists probably (Susskind, 2005), i.e., spirit or God. This is a relation between multi-worlds and spirit. But, we must distinguish the imaginary world, the spiritual world, and the common observable physical world.

The fields of psychology, especially evolutionary psychology explore the "modular" thinking model. But, these modules are found to be widely distributed, not at some physical intervals, and can partially overlap and cross, and compete with each other and influence each other. This can be applied to parapsychology and forms network models. Specifically for autism, it can form the new network, and combined with traditional Chinese medicine to get through the channels in body.

Evolutionary biologist H. Mostafavi, et al., researched the large-scale genetic studies of the evolution of the human genome, and analyzed DNA of 215,000 individuals. We should study of the genetic inheritance and evolution of parapsychology. This has the family history, and blind children seem to have complementary, one deletion, and one gain. Based on our trained results for blind children and modern neurobiology, we proposed a testable prediction: The neural excitable cell is continuously induced and excited, then grow out new synapse and dendrite, so the feeling system, hearing system, smell system, etc., may joint to visual system, and form a new neural network, and achieve finally a transformation among vision and other sensations. Further, we proposed some possible tests, for example, scientists may train the blinded animals, then dissect their brain, and compare their different functions and different results. And these results may compare with those animals lack some sense organs. If this hypothesis is validated, it will bring benefit to mankind, in particular, disability (Chang, 2013b;2017a).

According to theology, each people have a decadent body and an immortal soul. From the general life system to the human world is composed of matter-energy-information three quantities. These are all trinity, unification of the world, etc. Three desire world, color world and colorless world may correspond to body-heart-spirit and matter-energy-information.

A big range of multi-space, and divine space may be similar to radio, electromagnetic fields propagate throughout the total world, each of our brains are just a radio with different frequencies and functions. Usual people do not see and hear waves of different frequencies, and frequencies are different functions, or different levels of time and space. By opening our minds and horizons, we may perceive different worlds. Two kinds of worlds may correspond to the wave-particle duality. The visible light wavelength of human is 380~780 nm. The developed potential first is to expand the wavelength of the visible light, to infrared, ultraviolet regions (Chang, 2020b). The soul world is more likely to be infrared low energy. We can detect the frequency of light of Buddhist, and biological and human body lights and frequencies. Listening can be similarly expanded. For different levels of space and energy, colors, incense and flavor, etc., are probably different.

One object has many phases, which corresponds possibly to multi-worlds, and to the double solutions of de Broglie-Bohm quantum mechanics, and to supersymmetry, which unified boson and fermion, and correspond to Yin and Yang, and to real phase and empty phase. Various phases all agree with science, and form entangled states. They can be interacted each other, and have phase transition. It can be assumed that there exists symmetry between different worlds, such as the symmetry between T and 1/T, T and R duality, etc. But usual symmetry breaks often. Multi-space may be superspace, and corresponds to supersymmetry. The supersymmetric wave function is the superposition of two wave functions. Further, it may develop into a multi-elements competition model of brain (Cohen, 2005; Edelman, 2008; Evans, 2008; Festinger, 1964; Livnat and Pippenger, 2006; Minsky, 1986; Misner, 1969; Tversky and Shafir, 1992). The simplified model can be transformed into a binary process model (Mesulam, 2000), and its mathematical description can apply the Lorenz model (Chang, 2013a).

6. Geometry of Complex Manifold for New Space

An imaginary world corresponds to imaginary number, $i^2 = -1$, i.e., mirror, and corresponds to boson and field. If the complex number is simplified to a real number, it will correspond to the real world; such it and real number and the corresponding world will obey the same law. For the unified complex number $a+bi$, it corresponds to complexity and complex world. We propose a mathematical tool—Kahler geometry of complex manifold for new space. This is a special Riemann manifold with invariant Riemann metric under classical complex structure. It is known that Riemann manifold is the geometric basis of general relativity, therefore, it may provide wide perspectives on deep investigation of new spaces in parapsychology.

Basis of complex manifold is (e_n, ie_n) . It is complexity of real vector space. A real space of n dimensions may develop to a complex space of $2n$ dimensions. Such the real space of 3 dimensions develops to the complex space of 6 dimensions. Yin-Yang as the number may be complex dimensions. Complex vector space has dual vector spaces.

The linear transformations between imaginary and real numbers, and between Yin and Yang are $J=i$, $Je_i = \sqrt{-1}e_i$, $J(\sqrt{-1}e_i) = -e_i$, both symbols are opposite. The set of complex linear isomorphism from the n -dimensional complex vector space V to its self constructs a group $GL(V)$ on the mapping composition. If the base is fixed in V , then $GL(V)$ and $GL(n,C)$ are isomorphic. Further, complex, real and virtual spaces can be isomorphism, homeomorphism.

For a complex smooth function $f(z) = g + ih$, it satisfies the Cauchy-Riemann equations:

$$\frac{\partial g}{\partial x} = \frac{\partial h}{\partial y}, \quad \frac{\partial g}{\partial y} = -\frac{\partial h}{\partial x} \quad (1)$$

This is also a mathematical relations between Yin-Yang worlds.

A special example of complex manifold is Hermite manifold. Hermite manifold (M,h) is Kahler manifold, whose necessary and sufficient condition is:

$$\frac{\partial h_{ij}}{\partial z^k} = \frac{\partial h_{kj}}{\partial z^i} \quad (2)$$

In this case D torsion of Hermite connection is 0. For the curvature operator R of Kahler manifold (M,h) is:

$$R(JX,JY)=R(X,Y) \quad (3)$$

Ricci curvature tensor Ric possesses property:

$$Ric(JX,JY)=Ric(X,Y) \quad (4)$$

Eqs. (3) and (4) are scaling, and possess fractal character. It describes that phase can be enlarged and reduced. This may describe special functions, such as writing words on a matchstick (Chang *et al.*, 2016).

Kahler manifold includes: the n -dimensional complex vector space C^n ; the complex projective space CP^n that is also Hausdorff space, which has correspondence and duality, etc; the complex hyperbolic space D^n ; the n -dimensional complex ring surface CT^n , etc. In fiber bundle Chern Class describes the degree of deviation of complex vector bundle from trivial bundle. In physics, the connection on the principal bundle is called the gauge potential, and the corresponding curvature is called the gauge field, for example, the well-known Yang-Mills field. Yang-Mills functional corresponds to Euler-Lagrange equations are namely Yang-Mills equations. Riemann symmetric spaces include Euclidean space, n -dimensional unit sphere, and hyperbolic space, etc. They have symmetry, duality, etc., and may correspond to the Yin-Yang homeomorphism. Kahler structure is also related to Calabi-Yau manifold and superstring, etc.

When Ricci curvature of Kahler manifold is constant, it is the Einstein manifold. General relativity has two distinct invariances: Einstein's $GL(4,R)$ invariance under coordinate transformations, and Weyl's $SL(2,C)$ gauge invariance (Isham *et al.*, 1972). General relativity may develop to the complex theory. $GL(n,C)$ is the n -dimensional complex general linear group. $n=6$ is $GL(6,C)$ that corresponds to the group unified four interactions (Chang, 1989).

Further, quaternion corresponds to multi-worlds, and we can apply the quaternion ring:

$$H = 1R \oplus iR \oplus jR \oplus kR \quad (5)$$

$$H = \begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix} + \begin{pmatrix} i & 0 \\ 0 & -i \end{pmatrix} + \begin{pmatrix} 0 & 1 \\ -1 & 0 \end{pmatrix} + \begin{pmatrix} 0 & i \\ i & 0 \end{pmatrix} \quad (6)$$

It is the extensive 4-dimensional spaces, in which the imaginary part is more than the real part, and the three virtual parts form the vector. They can correspond to human beings, ghosts, spirits (Ashuras) and gods, respectively, and form four or six way cycles.

In relativity the 4-dimensional space-time appears already the imaginary time. In Feinberg and Bilaniuk-Sudarshan imaginary superluminal transformation (iLT), imaginary quantity corresponds to superluminal (Chang, 1989;2013c).

Riemann curvature is:

$$R = \begin{pmatrix} k_1 & 0 \\ 0 & k_2 \end{pmatrix} \quad (7)$$

This corresponds to transformation matrix, so it may develop to:

$$\sigma R = \begin{pmatrix} ik_1 & 0 \\ 0 & -ik_2 \end{pmatrix}, \begin{pmatrix} 0 & k_1 \\ -k_2 & 0 \end{pmatrix}, \begin{pmatrix} 0 & ik_1 \\ ik_2 & 0 \end{pmatrix} \quad (8)$$

This may combine general relativity and twistor, etc., and develop to high-dimensional space, whose corresponding curvature may be:

$$R = \begin{pmatrix} k_1 & 0 & \dots & 0 \\ 0 & k_2 & \dots & 0 \\ \dots & \dots & \dots & \dots \\ 0 & 0 & \dots & k_n \end{pmatrix} \quad (9)$$

In 1993 David Bohm studied the indivisible universe, which proposed some possible connections between quantum theory and consciousness. David Chalmers discussed the conscious mind, and the psychophysical principle. Astrophysicist Andrei Linde proposed that we should consider and develop a unified approach to our entire world, including consciousness. Moreover, B. Rosenblum and F. Kuttner discussed the quantum enigma when physics encounters consciousness. Scientist researched the mind-brain dualism, psychokinesis and universal connectedness, etc. De Barros and Montemayor (2019) edited *Quanta and Mind*, which includes 20 chapters from quantum to consciousness by many authors.

The multi-universe allows people to fully imagine, such as Faust, Alice in Wonderland, etc. In this world we can not get love, longevity, immortality and so on, but can be obtained in other world. At the same time, we must attend to distinguish between abnormal space caused by psychedelic or "psychic" drugs, etc.

In philosophy, one world corresponds to one element; many (two) worlds correspond to many (two) elements. Yin and Yang can correspond to positive and negative matter; three-dimensional body-mind-spirit correspond to Earth-Man-Heaven triple, matter-person-spirit and so on. If there are three worlds of body-mind-spirit, its center corresponds to the special function, potential, Qi, etc. In Qigong state, α wave increases 1.5~5 times. For the thought field ESP is received, PK is emitted. Eagleman, LaConte and Chiu, et al., proposed the prefrontal workout (Irwin and Wilson, 2013; Irwin, 2014; Roney-Dougal et al., 2013), which is quite similar to Chinese Qigong.

For the cosmological view of the double world, both connections are interactions between nature and mankind, and a unified field of man-nature. In the corresponding parapsychology the two worlds can interact with each other.

7. Summary

Parapsychology as a new science must be universal for the world as physics, chemistry, etc. But, it is not physics, and is like biology and medicine, and is different for each individual, which is its complexity. We should verify some phenomena in parapsychology by experiments, such as telepathy and telekinesis, etc. Further, we should research various effects in mind and spirit worlds. Any observations and detections on mind and spirit worlds and on relations between both and matter will be very valuable.

In a word, parapsychology is not only to produce possibly growth points of new science, such as other feelings instead of eyes (Chang, 2013a;2017b), but also may have great inspiration and significance to the national economy and people's livelihood, such as remote sensing, predictions for earthquake (Chang, 2004a;2017b;2021d) and other natural disasters.

Although phenomena in parapsychology are differences for many nations, and they should not follow the same pace, but, they must be the same results by various ways, and merge into the common sea of mankind. Parapsychology cannot build behind closed doors, independent from the world. They should give full play to their respective advantages, overcome their own shortcomings, learn from each other, and jointly make special contributions to the development of parapsychology in the world. Chinese research of parapsychology can combine rich traditional Chinese culture to display various unique parapsychological phenomena.

American Society for Psychical Research is second academic association in world, and first academic association in USA. 2025 will be its 140th anniversary.

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