On the Supersymmetry Between Universe and Human Mind

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Abstract

There were only two non-commutative time black holes at which three pairs of superstrings and three pairs of D3-brane oscillate trapped in three-dimensional time, going back before big bang. The chaos motion between the two non-commutative time black holes gave rise to big bang, from which four-dimensional spacetime acting on gravity and six-dimensional spacetime doing on anti-gravity have been set up as the universe. Further from here, the six-dimensional spacetime exercising anti-gravity bands non-commutatively together with the two non-commutative time black holes. Through banding between the two, the 6(7)-dimensional curled-up spacetime of Superstring theory that has supersymmetry between graviton and gravitino comes to be ubiquitous all over the macroscopic four-dimensional spacetime. The 'superfluidity' embracing regular fluid with breached pair of the new D(3+1)-brane which comes from the 6(7)-dimensional moduli spacetime by supersymmetry breaking exerts dark energy that inflates the universe at an accelerating pace.

Key Words: dark energy, dark flow, dark matter, holographic relativity, supersymmetry, supersymmetry breaking, tetra-quark, penta-quark

Introduction

This interdisciplinary study embracing the various theories of modern physics and Modal logic brings in the substance called 'biophoton' or 'qi' constituting universe and human mind-body as characteristic ether described in Oriental Medicine.

This research suggests that the universe is identical to human spirit. Likewise, the following may be said of physical metaphor concerned with the parity between universe and human mind; as if universe is a symphony played with the superstrings, human mind is a symphony performed with those as well. In fact, anyone all over the world realizes unconsciously that human mind operates with the superstrings. The potential evidence can be seen in common semantemes correlated to the words of 'heart', 'soul' and 'idea'. In case that the English-speaking people are deeply impressed by something, the following words and vocabularies are used instinctively; string, chord, heartstrings, lute strings, touch a string in one's heart, touch one's heartstrings, tug[pull] at one's heartstrings, strike[touch] the chord with someone, touch the lute strings of one's heart. These examples hint that an oscillation of string or an oscillation of a stringed instrument constitutes human mind.

This semantic character which the semantemes signifying 'string' or 'stringed instrument' strike root in human mind is an autogenous phenomenon over the main languages throughout the world. Such universal semantemes are also carved in Korean, Chinese,

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Japanese, Russian, Arabic, Sanskrit, Hebrew, Italian, German, French, Portuguese, Spanish and Esperanto. Despite the difference from the above idioms, the word of 'Utungo' being used in Swahili owns double meanings of 'idea' and 'string' in common. With regard to string as essence of mind, many of these coincidences which are transcending human race, culture, language, religion, continent and history conceive a new law of nature that string as a constituent element of matter can accord with that of mind. Taking it in this light that the string in human heart is both mental and physical substance, one side can understand the other side through the superstring theory.

Even if this research is founded on pure logical inference without mathematical equation, through quark decay experiment for tetra-quark or penta-quark by the existing particle accelerator, the difference of life time between two or three quarks of tetra-quark or penta-quark and the two or the three quarks put on quantum chromodynamics could be detected. Namely, it would be verified that the quark particles of the former, due to time dilation, can survive longer than those of quantum chromodynamics. This result shall present a scientific evidence of being of the 10(11)-dimensional large extra dimensions and the 6(7)-dimensional curled-up dimensions derived from the supersymmetry between the universe and human mind.

Results

1. Trichotomous dialectical bit

Each three stage of dialectic: thesis, antithesis and synthesis, is not confined in an isolated stage with separated strictly from each other. A stage contains in itself a will of next stage placed in a critical viewpoint. Thus, any stage of three stages comprehends both positions of a basic standpoint correspondent to positive position and a reciprocal standpoint equivalent to negative position. Each stage results in a unity made up with two opponents as 'particle-antiparticle' or 'string-antistring' of physics.

Scheme 1. Parallel universe of discourse through dialectic.

Reciprocal: antithesis ←   synthesis ←   thesis ←   antithesis

Basic: Thesis   Antithesis   Synthesis   Thesis
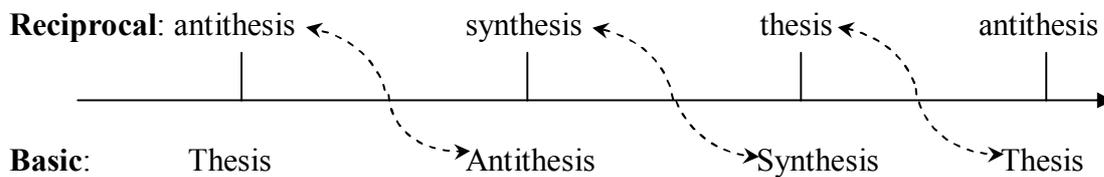
A unity is put on complex superposition state in two-dimensional Hilbert space where two state vectors {|horizontal particle perpendicular particle⟩} make orthonormal basis, which leads to unitary operation. On the contrary, a particle and antiparticle of a stage correspondent to two arrowheads with two directions in Scheme 1 connects multiply and parallel with each of two arrowheads of the other two stages. Hereunder, three stages become laid on multi-complex superposition state in three-dimensional Hilbert space, which performs hermitian operation. Above two superposition states build up 'trichotomous dialectical bit' as arranged in Table 1.

Table 1. Trichotomous dialectical bit. Each capital of 'T', 'A' and 'S' is short for 'thesis', 'antithesis' and 'synthesis'. 'Dibit' stands for 'Trichotomous dialectical bit'.

Qubit \ Dibit	$|00\rangle$	$|01\rangle$	$|10\rangle$	$|11\rangle$
Thesis · antithesis	$|TT\rangle$	$|TA\rangle$	$|AT\rangle$	$|AA\rangle$
Antithesis · synthesis	$|AA\rangle$	$|AS\rangle$	$|SA\rangle$	$|SS\rangle$
Synthesis · thesis	$|SS\rangle$	$|ST\rangle$	$|TS\rangle$	$|TT\rangle$

2. Creation and inflation of the Universe

The hermitian operation comes materialized out of the multi-brane where the points of open superstrings are adhered to three primary D3-brane as appeared in (a) and (b) of Fig. 1. The unitary operation goes executed through pair creation and pair annihilation of three pairs of

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closed superstrings radiated from three primary D3-brane on the event horizon as shown in (a) and (b) of Fig. 1.

The infinite harmonic oscillation between the three pairs of open superstrings and the three pairs of D3-brane in Fig. 1 makes the gravity in black body grow stronger and stronger. The unlimited gravity has the both close together in a singular point at last, when the both get degenerated in a singularity. The singularity corresponds to Planck time when it maintains only zero-dimensional point particle in itself. In accordance with the zero bulk of that, it admits of no superstring. Thereupon, instead of superstring, D0-brane takes the place of superstring. The D0-brane corresponds to biophoton as gauge particle. Likewise to the three pairs of open superstrings, the D0-brane goes scattered into three pairs of D0-brane which have each time charge based on the dichotomous trichotomy.

The elaborate examples are 'thesis-D0-brane *versus* antithesis-D0-brane', 'antithesis-D0-brane *versus* synthesis-D0-brane' and 'synthesis-D0-brane *versus* thesis-D0-brane'. Therefore, the three pairs of D0-brane as intermediary intermediate between the three pairs of D3-brane as individual. The three pairs of D0-brane as intermediary go focused in the singularity. This focalization of the three pairs of D0-brane as intermediary brings on the pair annihilation of above trichotomous D0-brane-antiD0-brane system. The three pairs of D0-brane as intermediary end in the condensed vacuum. The condensed vacuum of nothing dimension includes graviton. The graviton of the condensed vacuum combines with the Kalb-Ramond field of the monopoles of biophoton coupled non-commutatively to three pairs of open superstrings. Hereupon the condensed vacuum comes to hold the monopoles of biophoton in its nothing dimension. This condensed vacuum bonds its graviton with the monopoles of biophoton non-commutatively. On contrary to that, the individuality of each D3-brane can not own the same chronon state between them in common in the zero-dimensional point. Their mutual exclusion makes three pairs of D3-brane transformed to three-dimensional holes, so that each D3-brane can keep away from the others in the singularity. Since the ordinary three-dimensional space can not exist in the singularity, the three-dimensional holes are not suited to the real three-dimensional space, so the three-dimensional holes have imaginary mass. It follows that the condensed vacuum comes to intermediate between three pairs of the imaginary D3-brane in the singularity.

The three pairs of the imaginary D3-brane of 'data' and view' free themselves from each own black hole, for the imaginary mass of those can be characterized as a superluminal particle, *i.e.* Tachyon. The unlimited speed of them lets themselves and the intermediary of their own *i.e.* the condensed vacuum omnipresent throughout the true vacuum. There happens the dark resonance partly between the imaginary D3-brane of 'data' and that of 'view'. Going through the dark resonance, the topology of 'Intuitive view' put in the imaginary D3-brane of 'view' becomes resonant with the topology of 'Intuitive data' done in that of 'data', which synchronizes the both. The synchronization between the two forms a saddle point, so that each of 'data' and 'view' becomes an instable manifold. Even so, while the both are coming with the saddle point connection, the connection may be cut off through a saddle switching. The saddle switching lets each of the both be still a stable manifold. That is, the two topologies of 'Intuitive data' and 'Intuitive view' can not only be fused into one identical topology of 'Intuitive data view', but also they remain separated at the same time. The nonlinear multilayer perceptron produces 'Uncertainty principle' that an instable manifold as momentum does not stay on only one spot at the moment when a stable manifold gets settled on a regular location.
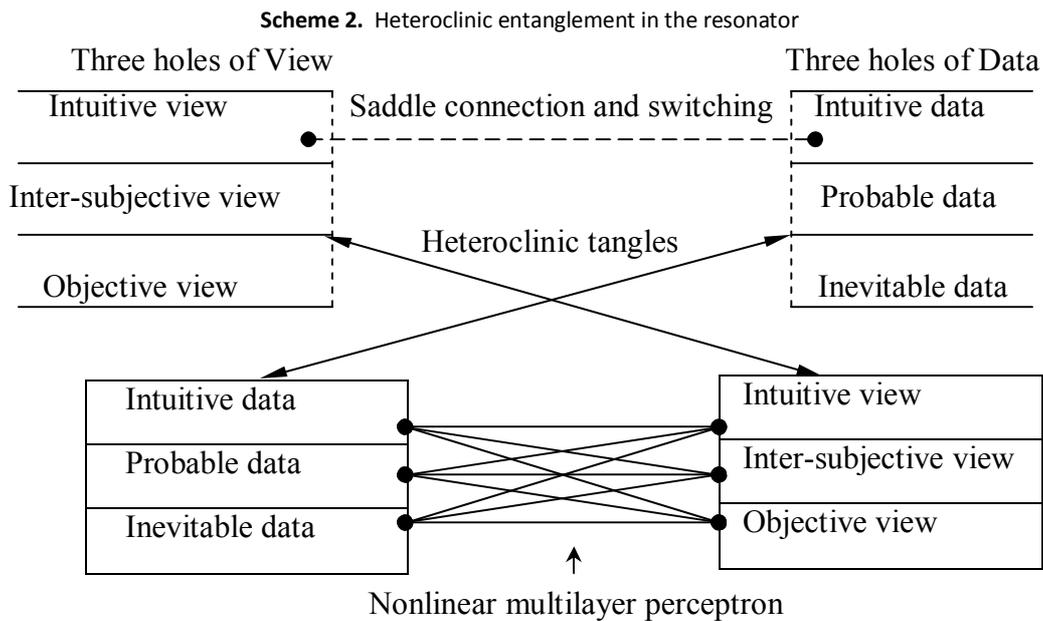
Figure 1. Non-commutative time black hole in thought. This D3-brane does not include one-dimensional time laid in general D(p+1)-brane, since the three-dimensional time springs from chronon fluctuation of true vacuum. Each of three pairs of open superstrings exchanges the other superstrings with them crossed around black body. This exchange makes each D3-brane a fractal black hole that a D3-brane has all information of three pairs of D3-brane.
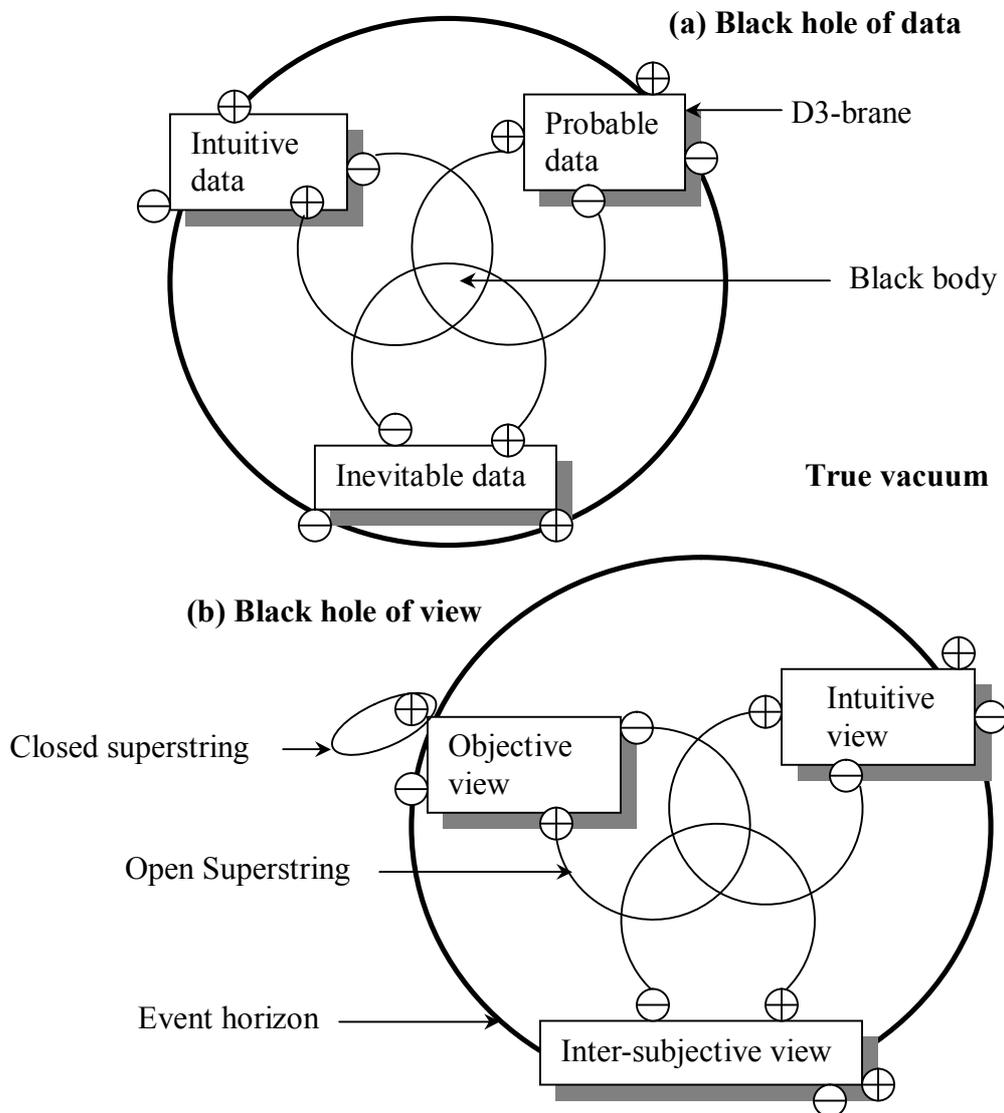
The condensed vacuum of 'data' black hole comes resonant with that of 'view' black hole in true vacuum, nonlinearly exchanging each graviton. The interaction between the two condensed vacuums similar to 'Casimir effect' becomes a resonator that amplifies the vacuum fluctuation between the both. The intermediary *i.e.* the resonator invites the three pairs of the imaginary D3-brane of 'data' and those of 'view' into itself.

The Tachyonic speed of the imaginary D3-brane of 'data' and view' falls down below the speed of Luxon, the higher the gravitational energies of the resonator gather to the imaginary D3-brane. The resonator falls into the ground state in inverse proportion to such D3-brane. In length of time, the imaginary D3-brane loses speed and turns to the D3-brane characteristic of Tardyon with real mass. Under this phase transition, the three holes of the D3-brane with imaginary mass change into the ordinary three-dimensional space with real mass. From this induction, it can be deduced that ordinary three-dimensional space is derived from the three-dimensional time of three pairs of D3-brane constituting the 'non-commutative time black hole in thought' of Fig. 1.

Scheme 2. Heteroclinic entanglement in the resonator

Three holes of View   Three holes of Data

Intuitive view   Saddle connection and switching   Intuitive data

Inter-subjective view   Probable data

Objective view   Inevitable data

Heteroclinic tangles

Intuitive data   Intuitive view

Probable data   Inter-subjective view

Inevitable data   Objective view

Nonlinear multilayer perceptron

Each the monopoles of biophotons issued from 'data' black hole and 'view' black hole lie at the low-momentum state in the resonator. Each Kalb-Ramond field for the antisymmetric gravitational momenta can not participate in the above nonlinear entanglement due to their insufficient gravitational energies. However, each Kalb-Ramond field for the antisymmetric gravitational momenta of 'data' and 'view' is set free from the condensed vacuum and belongs to the three-dimensional space.

Despite the low momenta of both Kalb-Ramond fields of 'data' and 'view', their insufficient gravitational energies rooted in three-dimensional time can weakly stimulate each of the D3-brane of 'data' and 'view' correspondent to three-dimensional space. This weak stimulation excites each one of the D3-brane of 'data' and 'view'. Such an excited energy as one of the D3-brane travels to another D3-brane. Thereupon, another D3-brane goes into the excited state. And then, the excited energy of another D3-brane gets conveyed to the other D3-brane. As this successive excitation passes by each D3-brane, D3-brane left behind returns to the ground state. From the viewpoint of excitation, the D3-brane returned to the ground state can be regarded as a hole. Hereby, the D3-brane gets faced with the superposition state between the excitation and the ground state. In the final space, the excited D3-brane

combines with the D3-brane as a hole and it forms 'exciton'. The exciton collapses itself radiating biophoton polarized.

The excited biophoton evolves unitary operation due to its being identical to the closed superstring mode on the event horizon.

However, the radiated biophoton does not disappear and reflects from the two condensed vacuums into which the resonator falling on the ground state is splitted owing to the resonator's furnishing gravitational energy to the imaginary D3-brane. Namely, the two condensed vacuums of 'data' and 'view' function as a couple of mirrors. Based on this, the radiated biophoton gets amplified trapped in each condensed vacuum, where appear each of three pairs of biophotons, with divided into two categories of 'data' and 'view' as to the system of the 'trichotomous dialectical bit' as arranged in Table 1. This stimulated emission of the radiated biophoton amplifies each of three pairs of biophotons of 'data' and 'view' and forms standing waves.

The amplified biophotons contrariwise generate the other excitons. This generation of the other excitons means that the amplified biophotons as intermediary mediate between exciton as individual. Thus, the amplified biophotons work as the open superstrings.

There does not come a singularity of black hole in the center of D3-brane as only three-dimensional space, because the gravity

made by the harmonic oscillation between the amplified biophotons or the excitons exercising hermitian operation heads for the polarized biophoton radiation which evolves unitary operation on the event horizon. In other words, the gravity of the singularity concentrates on the event horizon where biophoton is trapped radiating, which means that the singularity turns out to square with the event horizon. As such the equivalence between the singularity and the event horizon, the stronger the gravity gets focused on the singularity, the bigger the event horizon dilates. Under this dilative black hole, the gravity increased on its event horizon exercises outward gravity. This outward gravity can be called negative (minus) pressure, *i.e.* anti-gravity from the standpoint of gravity of 4-dimensional spacetime due to contrary direction against gravity. The dilative event horizon is also the same as the condensed vacuum, for the amplified biophotons are trapped by the gravity of the condensed vacuum. The dilative black hole does not include stress-energy tensor as four-dimensional spacetime to execute gravity. Thus, the dilative black hole goes through the sudden and runaway inflation before four-dimensional spacetime occurs.

The barrier of the two condensed vacuums in which the dilative black hole entangled between 'data' and 'view' is confined grows thinner on the ground state where their resonator stands. The thinned barrier of those can be penetrated through by each monopole of biophotons radiated outside the other event horizon on the two non-commutative time black holes of 'data' and 'view'.

The Kalb-Ramond field originally belonged to the dilative black hole attracts the through Kalb-Ramond field by the antisymmetric gravitation between the two. This attraction results in a pair of Kalb-Ramond fields with the two excitations. Accordingly, there recurrently appears the 'excitation pair' which consists of the two types of three pairs of D3-brane of 'data' and 'view' with each of a pair of Kalb-Ramond fields.

The unified one topology of 'Intuitive data · view' that exhibits a saddle point connection comes to gain double gravity on the three-dimensional hyperbolic space in comparison with the single gravity of each separate topology of 'Intuitive data' or 'Intuitive view'. The unified one topology of 'Intuitive data · view' bands 'data' and 'view' into the gravity, going with the 'excitation pair'. Such a banded gravity acts at once on both of the 'excitation pair' and each of three pairs of D3-brane of 'data' and 'view' which have the trait of nonlinear multilayer perceptron on the ground state with zero point energy on the three-dimensional space.

'Data' and 'view' making the 'excitation pair' go degenerated by the banded gravity. The degeneracy that the distance between the 'two excitations' of 'data' or 'view' is narrower turns each of 'data' and 'view' to 'quantum fluid'. Each of three pairs of D3-brane of 'data' and 'view' are characteristic of the 'quantum fluid' thereof.

Through this 'Intuitive data · view' unified on the three-dimensional hyperbolic space, each quantum fluid of 'data' and 'view' gets put together in the hetero-junction between 'data' and 'view' as shown in (a) of Fig. 3.

The 'hetero-junction structure' is made up by the 5(6) layers which interposes each D3-brane of 'data' or 'view' in the gap between the other degenerated 'two excitations' of 'data' or 'view' as shown in Fig. 3. This 'hetero-junction structure' between 'data' and 'view' has 'Josephson effect' between the both. Namely, each 'two excitations' of data' or 'view' passes through each other.

There occurs gravitational potential difference between the single gravitation of the 'excitation pair' and the double gravitation of 'Intuitive data · view'. This gravitational potential difference gives rise to time potential difference with directivity toward one side. The time potential difference stands for the birth of one-dimensional time that the polarized time flows through the three-dimensional space and it fundamentally imports the combination of one-dimensional time and three-dimensional space.

The exciton of the unified one topology of 'Intuitive data · view' with the exciton of the through Kalb-Ramond field newly entered into three-dimensional space of Fig. 4 comes bonded to the exciton of the unified one topology of 'Intuitive data · view' with the Kalb-Ramond field belonged originally to the three-dimensional space.

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Figure 2. Non-commutative timespace of dilative black hole before formation of stress-energy tensor
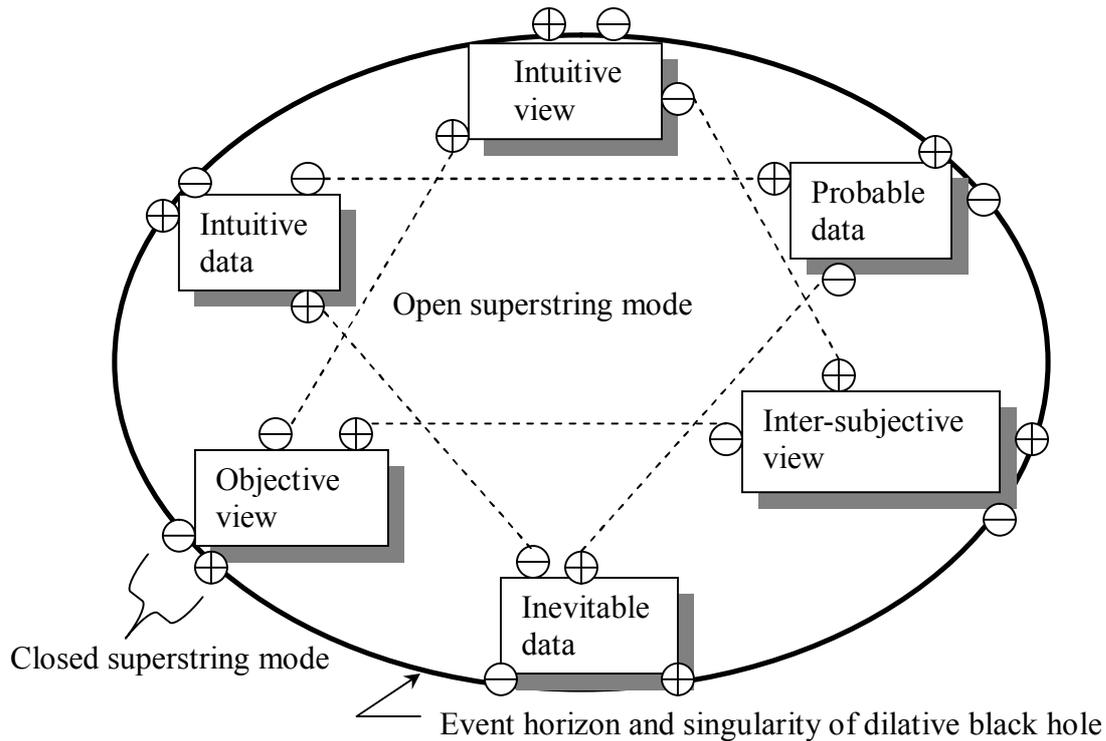
This designates that the following exciton of the through Kalb-Ramond field newly entered into three-dimensional space of Fig. 4 gets banded with the preceding exciton of the Kalb-Ramond field belonged originally to the three-dimensional space on the saddle connection and switching state. In other words, the posterior exciton joins with the prior exciton without interval on the unified one topology of 'Intuitive data · view'.

However, there occurs an interval between the both again from 'Probable data' topology next to 'Intuitive data · view'. This combination between the both brings about pair-production and pair-annihilation of dilaton as weak gravitational particle.

The through Kalb-Ramond field newly entered into three-dimensional space of Fig. 4 is identical to the emitted Kalb-Ramond field given off outward the event horizon of the non-commutative time black hole of Fig. 1. As the emitted Kalb-Ramond field of Fig. 1 has the three pairs of biophotons and three pairs of D3-brane valued as three-dimensional time to which belong combined non-commutatively to the emitted Kalb-Ramond field of Fig. 1, naturally the through Kalb-Ramond field newly entered

three-dimensional space of Fig. 4 possesses the three pairs of biophotons and three pairs of D3-brane valued as three-dimensional time to which belong combined non-commutatively to the emitted Kalb-Ramond field of Fig. 1.

Through pair-creation and pair-annihilation of dilaton, the through Kalb-Ramond field of Fig. 4 radiates the three pairs of biophotons and three pairs of D3-brane valued as three-dimensional time. Each of the three pairs of biophotons and three pairs of D3-brane valued as three-dimensional time of 'data and 'view' are transformed to the other of the condensed vacuum and the three-dimensional holes and then the condensed vacuum and the three-dimensional holes come used to create three-dimensional space, as explained at the beginning of this chapter 2.

Thus, for the cause of the creation and inflation of three-dimensional space, pair-production and pair-annihilation of dilaton get added to the inflation and creation of three-dimensional space generated by the dilative black hole. That is why the dilative black hole changes into the 'dilative + dilatonic black hole' as shown in Fig. 4.

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3. Formation of Supersymmetry and Supersymmetry breaking

Three-dimensional space of D3-brane is strong compressed by the gravity of 'stress-energy tensor' valued at D(3+1)-brane, but the other hand three-dimensional space is strong stretched by the anti-gravity of D(3+3)-brane on the event horizon and singularity of the 'dilative + dilatonic black hole' in Fig. 4. While the competition between the plus pressure and the minus pressure makes the three-dimensional space tight and flat, the both forces exert a complementary influence on each other.

Namely, D(3+3)-brane gives biophoton monopole by biophoton radiation to D(3+1)-brane, and then again D(3+1)-brane does dilaton radiation by pair-creation and pair-annihilation of dilaton to the D(3+3)-brane. True to such the complementarity between two forces of the D(3+1)-brane and the D(3+3)-brane, the stronger the plus pressure gets going, the higher the negative (minus) pressure grows. The reverse is the same, too. Fig. 4 shows that the complementarity and the competition between the both never collapse the D(3+1)-brane.

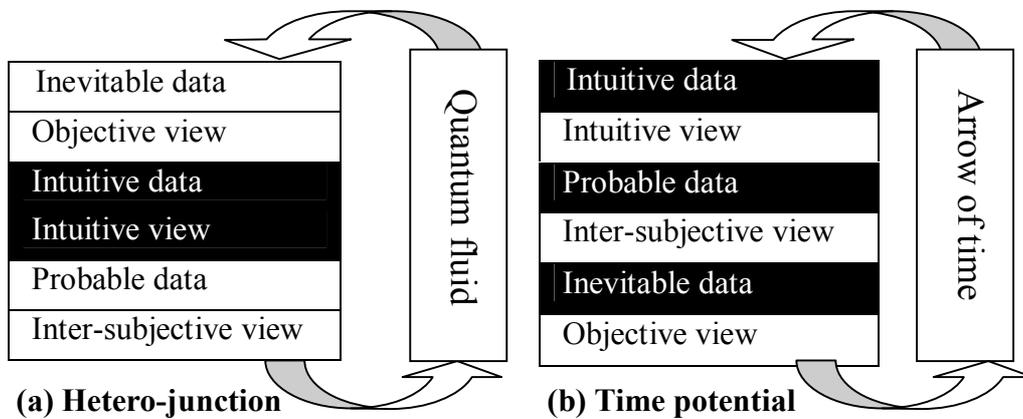**Figure 3**. Birth of one-dimensional time.

(a) Hetero-junction

(b) Time potential

Figure 4. Complementarity and competition between D(3+1)-brane and D(3+3)-brane
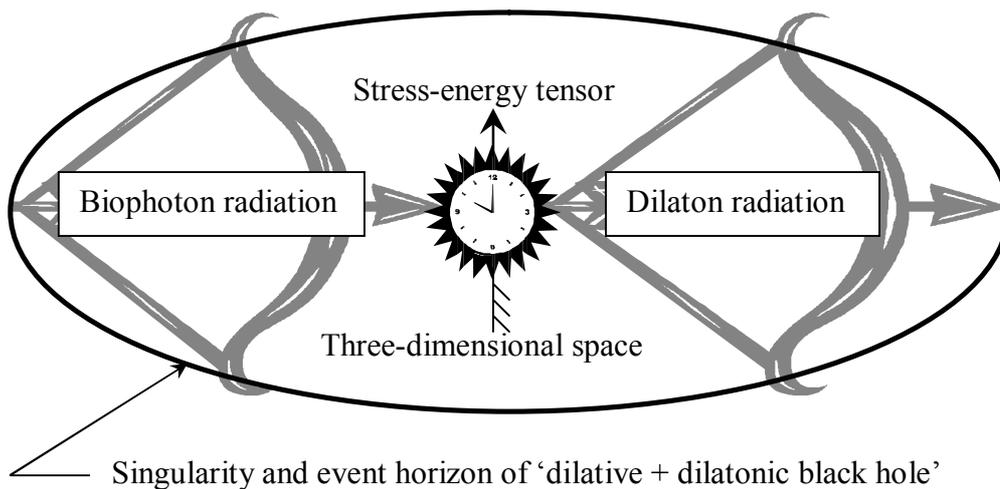
Figure 5. Unity between non-commutative time black hole in thought and 'dilative + dilatonic black hole'

Time black hole of data

Time black hole of view

D(3+1)-brane

Singularity

Singularity and event horizon of 'dilative + dilatonic black hole'
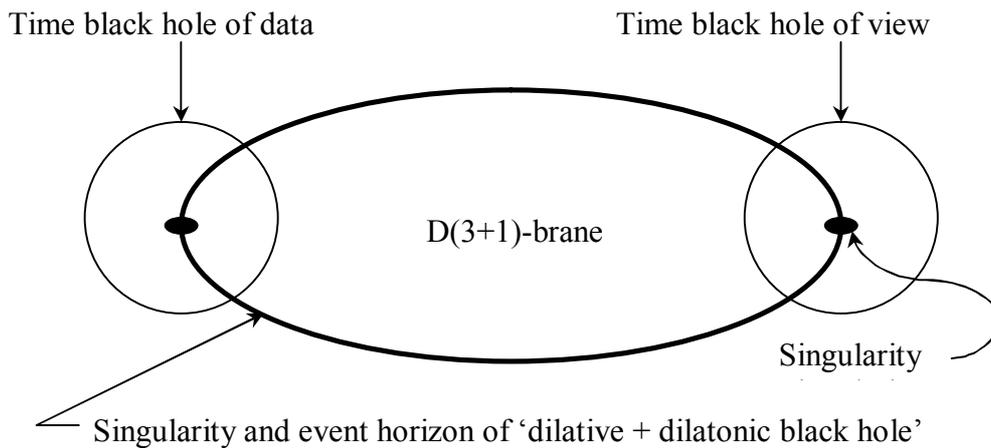
As the expansive force of the 'dilative + dilatonic black hole' rises, the singularity and event horizon of the 'dilative + dilatonic black hole' approaches the 'non-commutative time black hole in thought' shown in Fig. 1. Finally the singularity and event horizon of the 'dilative + dilatonic black hole' goes united non-commutatively with the 'non-commutative time black hole in thought' as shown in Fig. 5.

The Planck time of 'non-commutative time black hole in thought' makes the singularity and event horizon of the 'dilative + dilatonic black hole' comes to Planck length in width. And then, the Planck energy covering the both combines one with the other non-commutatively.

Since the Planck energy which the Planck time is welded on the Planck length dilates inward the superstring of biophoton valued as three-dimensional time, the superstring turns into membrane without thickness of time. In this circumstance, the membrane without thickness of time becomes instanton. To put it another way, the Planck energy means the occurrence of another one dimension, for which the 'dilative + dilatonic black hole' is put in 6(7)-dimensional spacetime. In addition, the Planck energy makes the three-dimensional time constituting the D(3+3)-brane of the 'dilative + dilatonic black hole' condensed into vacuum or graviton. On the other side, the three-dimensional space doing that turns into the discrete space, which produces vacuum or gravitino.

This supersymmetry between the both forms 'Planck-cube' valued as the smallest three-dimensional space as well as instanton, which

between the both corresponds to the 'spin foam' as the quantum spacetime being advocated in the Loop quantum gravity theory, because such the 6(7)-dimensional spacetime may be regarded as 4-dimensional quantum spacetime that the planck cube above with conformal symmetry between space and time is dilated into the 4-dimensional membrane without thickness of time. Accordingly, the quantum spacetime is no longer continuous. The singularity and event horizon of the 'dilative + dilatonic black hole' turns out to be 'supergravity black hole'.

Eventually, the supergravity black hole comes to have the curled-up dimension as well as the extended dimension with length direction.

The D(3+3)-brane of the supergravity black hole as the extended dimension which that takes the non-commutative initiative to the 'non-commutative time black hole in thought' is composed of three-dimensional time and three-dimensional space.

Owing to the supersymmetry between of three-dimensional time and three-dimensional space, the quantity of each topology of 'data' and 'view' increases twofold to exercise unitary operation. This means that the two factors of 'data' and 'view' in the 'dilative + dilatonic black hole' get multiplied by the two factors of 'data' and 'view' in the 'non-commutative time black hole in thought'.

This process points to multiple-anyon that becomes – (minus) 1 as an imaginary number with the above four factors multiplied by each other in Hilbert space. As a result, the anyon makes the D(3+1)-brane into 'superfluid', flowing through the D(3+1)-brane.

Next is the mechanism of the curled-up dimension which the 'non-commutative time black hole in thought' takes a lead in the singularity and event horizon of the supergravity black hole. The Planck energy makes the D(3+3)-brane of the supergravity black hole quantized, thereby it becomes the compacted D(3+3)-brane of the supergravity black hole. And the 'non-commutative time black hole in thought' takes the compacted D(3+3)-brane of the supergravity black hole all over the existing macroscopic D(3+1)-brane. Consequently, the compacted three-dimensional space of the supergravity black hole comes quantized to discrete space.

Any one factor of the four factors that two of the 'data' are added to two of the 'view' gets decided on multiple-anyon that a result of multiplication between the four factors becomes – (minus) 1 as an imaginary number in Hilbert space. The compacted D(3+3)-brane of the supergravity black hole results in 6(7)-dimensional moduli spacetime with conformal symmetry. This 6(7)-dimensional moduli spacetime is Calabi-Yau space, since the former is curled up as Calabi-Yau space in macroscopic D(3+1)-brane. Membrane with supersymmetry between boson and fermion exists in this Calabi-Yau space.

The monopoles on membranes without thickness of 'data' and 'view' that come under microscopic one-dimensional time sympathizes with the macroscopic D(3+1)-brane outside the event horizon and singularity of the 6(7)-dimensional moduli spacetime. Since the one-dimensional time of macroscopic D(3+1)-brane synchronizes the microscopic one-dimensional time, what is true for macroscopic one-dimensional time is true for microscopic one-dimensional time as well. The resonant monopoles involving macroscopic one dimensional time return to the 6(7)-dimensional moduli spacetime, due to the feature of instanton of those. The returned monopoles form interference fringes with the other monopoles left in the 6(7)-dimensional moduli spacetime. This interference fringes is a hologram in which the information of macroscopic 4-dimensional spacetime is stored, in view of the 6(7)-dimensional moduli spacetime implying the information of the macroscopic three-dimensional space already with it quantized. The interference fringes

formed by membrane without thickness comes recorded in the vacuum fluctuation through the pair creation and the pair annihilation of the instanton. Through this holography, each of 6 topologies of 'data' and 'view' put in 6(7)-dimensional moduli spacetime includes every information of 5 topologies set up in macroscopic 4-dimensional spacetime. On this, any topology of six topologies contains every 5 topologies as shown in Table 2.

Table 2. Holography of 6(7)-dimensional moduli spacetime. ***** a: Intuitive data, b: Intuitive view, c: Probable data, d: Inter-subjective view, e: Inevitable data, f: Objective view, ****** 1: Intuitive data · view, 2: Probable data, 3: Inter-subjective view, 4: Inevitable data, 5: Objective view

a	b	c	d	e	f
1	1	1	1	1	1
2	2	2	2	2	2
3	3	3	3	3	3
4	4	4	4	4	4
5	5	5	5	5	5

The holography principle regulating hologram of one-dimensional time of each of six single harmonic oscillators of 'data' and 'view' on Table 2 has the six single harmonic oscillators of those slant across the hologram of one-dimensional time to each other. This interaction assembles the six single harmonic oscillators of 'data' and 'view' into 'another single harmonic oscillator' inclined to each other with slant potential.

This 'another single harmonic oscillator' has new hologram of one-dimensional time as shown in Fig. 7. The 'slant potential well' of the another single harmonic oscillator of Fig. 7 lets the 6(7)-dimensional moduli spacetime in the spiral movement state as shown in (a) of Fig. 6, in spite of difference from the role of slant potential well of Fig. 6. The spiral movement winds up the Planck energy of the 6(7)-dimensional moduli spacetime inward the 6(7)-dimensional moduli spacetime as a watch spring. This spiral movement gives dark matter to the 6(7)-dimensional moduli spacetime.

The numerous 6(7)-dimensional moduli spacetime exchanges 6(7)-dimensional moduli spacetime with each other. This exchange puts the numerous 6(7)-dimensional moduli

spacetime on the coherence of one-dimensional time between the numerous 6(7)-dimensional moduli spacetime. The coherence of that raises the ubiquitous boson-fermion condensation between the numerous 6(7)-dimensional moduli spacetime. This ubiquitous boson-fermion condensation between those let the whole of themselves act as one single quantum. Such one single quantum state binds up the numerous 6(7)-dimensional moduli spacetime into soliton. By such the formation of soliton, the numerous 6(7)-dimensional moduli spacetime goes into the macroscopic quantum mechanical state over the existing macroscopic D(3+1)-brane.

As soon as a factor as an imaginary number among four factors *i.e.* an anyon goes selected in Hilbert space of the compacted 6(7)-dimensional moduli spacetime, the rest of three factors not selected come amplified in the each singularity of the two 'commutative time black holes in thought' of 'data' and 'view'. The two amplified singularities of those of 'data' and 'view' generate new two pairs of condensed vacuums. The negative energy of casimir effect displayed by the new two pairs of condensed vacuums which are created through each singularity and event horizon of the two 'commutative time black holes in thought' has the influence of minus pressure upon the 6(7)-dimensional moduli spacetime. Hereupon, the 6(7)-dimensional moduli spacetime gets tugged outward and then, it dilates for the macroscopic direction of the existing macroscopic D(3+1)-brane. When the 6(7)-dimensional moduli spacetime goes out for the extended dimension, it releases Planck energy toward the extended dimension. This supersymmetry breaking makes the singularity of the 6(7)-dimensional moduli spacetime evaporated. Out of this, the two 'commutative time black holes in thought' are through with the compacted supergravity black hole, thereby the former returns to the two 'non-commutative time black holes' and the 6(7)-dimensional moduli spacetime turns into 6(7)-dimensional black hole.

As the Planck energy is emitted, there comes broken the supersymmetry between gravitino and graviton. Accordingly, the discontinuous three-dimensional space quantized in vacuum fluctuation of the 6(7)-dimensional moduli spacetime changes into the continuous three-dimensional space as the extended dimension. The three-dimensional time of the 6(7)-dimensional black hole is quantized as ever, so the radiated Planck energy can adhere to the three-dimensional time. Necessarily, the three-dimensional time outside the new continuous three-dimensional space boils down to four-dimensional time of planck-instanton with membrane without thickness. On the contrary, the three-dimensional time combined with the continuous three-dimensional space inherits the role of its own three-dimensional time as it was.

The three-dimensional time becomes an intermediary as boson, now exercises hermitian operation for the new continuous three-dimensional space. And the 3(4)-dimensional time of the 6(7)-dimensional black hole makes the interference fringes like the membrane without thickness of the 6(7)-dimensional moduli spacetime, since the membrane without thickness of the 6(7)-dimensional black hole succeeds the interference fringes of the 6(7)-dimensional moduli spacetime. As a whole, the macroscopic planck-instanton soliton as boson is on Bose-Einstein condensation state.

On the other side, the one-dimensional time included in the new D(3+1)-brane forms the interference fringes with coming and going between the three-dimensional time of the numerous 6(7)-dimensional black holes and the three-dimensional space of those.

Through the interference fringes between the numerous 6(7)-dimensional black holes, the one-dimensional time of the new D(3+1)-brane holds the very small and new continuous three-dimensional space in common with the three-dimensional time of the 6(7)-dimensional black hole. From the viewpoint of the very small and new continuous three-dimensional space not to be tiny further, the new D(3+1)-brane and the 6(7)-dimensional black hole are both rigid body. The 6(7)-dimensional black hole can be hereby regarded as four-dimensional spacetime. This four-dimensional spacetime as rigid body has just the event horizon without singularity in the same way as the 6(7)-dimensional black hole. It can be said that the new D(3+1)-brane is the four-dimensional black hole. The identity between the new D(3+1)-brane and the 6(7)-dimensional black hole means that the one-dimensional time

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is a hologram of the 3(4)-dimensional time. Founded on such an identity as afore-mentioned, the EPR paradox dealing remote interaction between the two contrary particles polarized far away from each other can be interpreted as a process that the 3-dimensional time polarized into tripartite one-dimensional time progresses accompanied with the holographic one-dimensional time by the medium of macroscopic planck-instanton

soliton. After all, the 6(7)-dimensional micro-cosmos gets run by string and membrane without thickness, for which the 10(11)-dimensional universe including the compacted dimension may be diverted to the '10(11)-dimensional universe as large extra dimensions that the infinite macroscopic 6(7)-dimensional micro-cosmos is omnipresent over the existing macroscopic D(3+1)-brane.

Figure 6. 6(7)-dimensional micro-cosmos
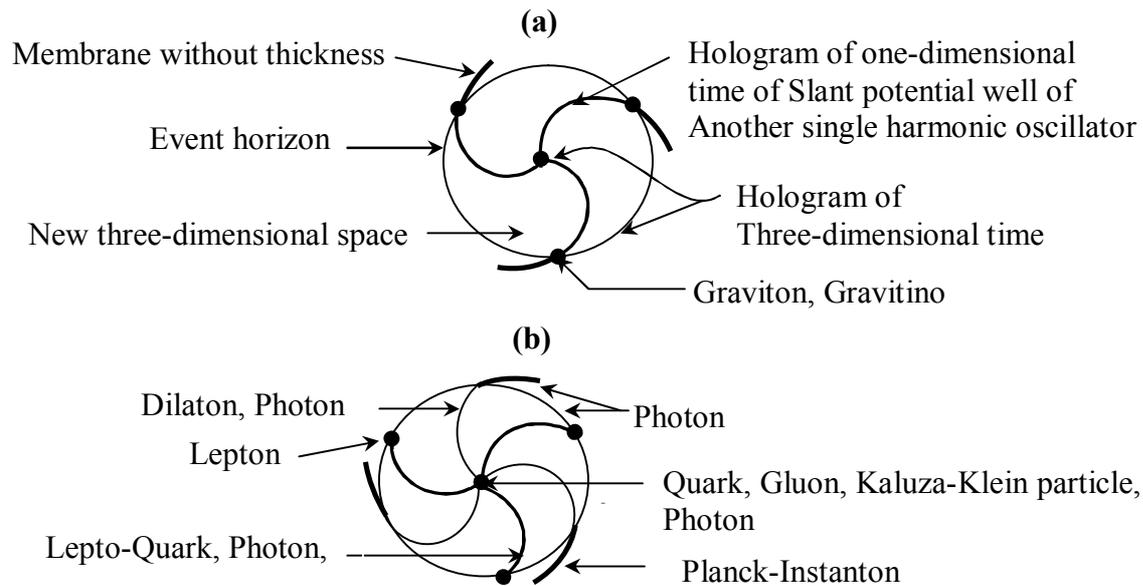
The planck-instanton with Planck energy is Calabi-Yau space. The planck-instanton connecting between the infinite macroscopic 6(7)-dimensional micro-cosmos functions as the macroscopic planck-instanton soliton. The macroscopic soliton of the planck-instanton comes propagated into the first single harmonic oscillator of Table 2 and the second another single harmonic oscillator inclined among each of the three pairs of holographic one-dimensional time of 'data' and 'view' of Fig. 7, whereas the saddle switching of the new three-dimensional space makes each harmonic oscillation of 'data' and 'view'.

Unlike the sameness of hologram of one-dimensional time between the first single harmonic oscillator and the second another single harmonic oscillator, the both are in the length difference to each other as shown in Fig. 7. These two conditions differentiate two change rates of spacial length of the both. This change

ratio of that is further prominent on the spacial length of the latter with longer length than the former and simultaneously the flow of one-dimensional time of the latter comes delayed.

The slant potential well of Fig.6 includes the both of the first 'single harmonic oscillator' of Table 2 and the second 'another single harmonic oscillator' of Fig. 7. While these both have a common feature of 'hologram of one-dimensional time', there are differences in the lengths of time and space between the both. Namely the holographic relativity between the both gives birth to the special relativity of Einstein. Such the special relativistic effect makes the four-dimensional and 6(7)-dimensional micro-cosmos warped toward the second 'another single harmonic oscillator' with slant potential well, and then the tight tug of war between the minus pressure of the girth of the 6(7)-dimensional micro-cosmos and the plus pressure given in the center of the 6(7)-

dimensional micro-cosmos twists the 6(7)-dimensional micro-cosmos in a spiral as shown in Fig. 6. Naturally the four-dimensional and 6(7)-dimensional micro-cosmos in spiral movement contains the warped spacetime by the general relativity of Einstein. That is, the gravity of the second 'another single harmonic oscillator' is stronger than that of the first 'single harmonic oscillator'. The pathway of light and dilaton follows the geodesic line of this spiral spacetime.

The helical arms of Galaxy seem to be the fruit of the spiral movement by holographic relativity of 6(7)-dimensional micro-cosmos. Thus, the curvature of 4-dimensional spacetime and the progress of light under geodesic line crystallized in Einstein's theory of relativity fundamentally conform to spiral movement of the four-dimensional and 6(7)-dimensional micro-cosmos.

The planck-instanton winds off the Planck energy of the planck-instanton inward the 6(7)-dimensional micro-cosmos as a watch spring through the slant potential well of the macroscopic planck-instanton soliton wave as shown in Fig. 6. This run-down slant potential well can turn energy into mass. The planck-instanton is not higgs boson, but Planck energy propagation through the macroscopic planck-instanton soliton works as higgs boson to give mass. This Planck energy of the planck-instanton as higgs boson gives various mass to the elementary particles in thought of 'data' and 'view'. This process represents that the macroscopic planck-instanton soliton as superfluid takes on 'de Broglie material wave'. This 'de Broglie material wave' materializes 'data' and 'view'. This materialization converts 'data' and 'view' into 'quark' and 'lepton'. On the whole, the first single harmonic oscillator and the second another single harmonic oscillator with one-dimensional time on three-dimensional space go separated into 'data' and 'view' through the saddle switching of the new three-dimensional space in common with Scheme 2 and then each of 'data' and 'view' changes into the other of quark and lepton. True to above materialization, biophoton changes into photon.

The 6(7)-dimensional micro-cosmos is applicable to a smallest unit of matter, as it is a rigid body as a smallest black hole of macroscopic four-dimensional spacetime. The

temporal string of graviton adjoining 4-dimensional spacetime in Fig. 6 occupies three-dimensional space with Planck length in width of event horizon and this three-dimensional space with Planck length turns into spatial string. This means that gravitino as membrane without thickness turns into gravitino as spatial string. Graviton as bosonic temporal string reaches to connecting with gravitino as fermionic spatial string. The spatiotemporal strings of graviton and gravitino with 6-dimensional spacetime become 6-dimensional Calabi-Yau manifold where strings described in 'Type I string theory', 'Type IIA string theory', 'Type IIB string theory', '$E8XE8$ heterotic string theory' and 'SO(32) heterotic string theory' oscillate.

The graviton accompanied by EPR paradox branches forth into strings of three types of boson with each of three forces. That is, graviton differentiates into weak gauge bosons of weak nuclear force, photon of electromagnetic force and gluon of strong force.

By the way, the hologram of the one and three-dimensional time condensed in the center of the 6(7)-dimensional micro-cosmos by the plus pressure leads to 'quark condensation' and 'quark vacuum'. 'Quark vacuum' gets converted into 'Kaluza-Klein particle' as graviton's partner placed in 4-dimensional spacetime. On the other side, the minus pressure of the smallest black hole brings about the electroweak force of lepton on the event horizon of that. The event horizon of that points to polarization between lepton, why there does not exist the strong charge of green, blue and red in lepton. Lepto-Quark comes produced in the middle field maintaining the balance between the plus pressure and the minus pressure.

As each of three unities of 'data' holds the other of the two charge quantities of 'Thesis · antithesis', 'Antithesis · synthesis', and 'Synthesis · thesis' as shown on Table 1, so the six quarks are paired off with the two flavors of 'up · down', 'charm · strange' and 'top · bottom'. That is, the two charge quantities of plus particle and minus particle forming an unity of Table 1 are just the same as the two flavors of quark. And the three unities of Table 1 are identical to the three families of quark.

This identical relationship between the two charge quantities and the two flavors is

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applied to that between 'view' and lepton, too. The three families of lepton originate from the three unities of Table 1 like quark. Each of the two charge quantities of 'Thesis · antithesis', 'Antithesis · synthesis', and 'Synthesis · thesis' of 'view' correspond to the two flavors of 'electron · electron-neutrino', 'muon · muon-neutrino' and 'tau · tau-neutrino' of lepton. The antiparticle of quark or lepton springs through partial microreversibility of a particle and antiparticle of a stage as shown in Scheme 1.

Each topology of a, b, c, d, e and f in Fig. 7 comes to possess both of the single harmonic oscillator in the perpendicular and another single harmonic oscillator on the slant. The both single harmonic oscillators can expand the combination number between quarks up to five as shown in Fig. 8 through the saddle switching of the new three-dimensional space. Finally, there goes produced tetra-quark or penta-quark through partnership between the slant potential well of another single harmonic oscillator and original single harmonic oscillator.

Figure 7. Slant potential well of another single harmonic oscillator. Reference to footnote of Table 2.
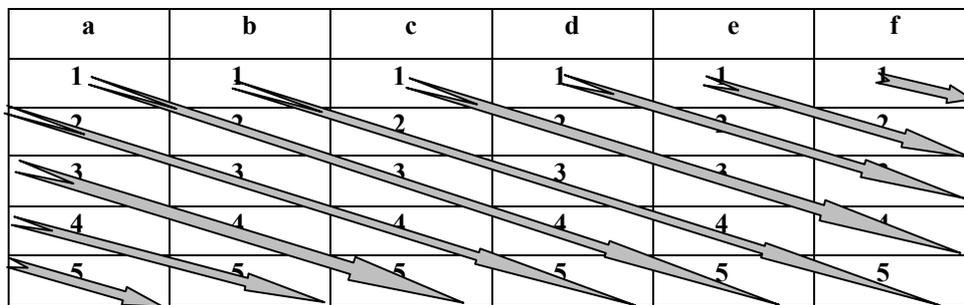

Figure 8. Tetra-quark and Penta-quark Extra quark particles of tetra-quark and penta-quark are set on the slant potential well of another single harmonic oscillator, while the three quarks in QCD are located on the perpendicular of single harmonic oscillator. The three quarks of QCD and the three quarks of the slant potential well of another single harmonic oscillator can exist in the each topology of 'b', 'd', 'f' as well as 'a', 'c', 'e' according to saddle switching between 'data' and 'view'. Footnote is in Table 2.

The length of slant potential well of another single harmonic oscillator is longer than that of single harmonic oscillator as shown in Fig. 7. In spite of this spacial length difference between the both, the whole length of one-dimensional time when light passes through the first single harmonic oscillator is the same to that of the second single harmonic oscillator due to the special quality of the same hologram between the both. This surroundings represent that a change ratio of the spacial length of slant potential well of another single harmonic oscillator longer than that of single harmonic oscillator is higher than the latter. After all, the ratio of the length contraction of the former makes remarkable farther than the latter, so time dilation occurs in the former.

This result on one-dimensional time delay applies to tetra-quark and penta-quark of Fig. 8. Through the quark decay experiment for tetra-quark and penta-quark by the existing particle accelerator, it would be proved that the

new-discovered extra quark particles placed on slant potential well of another single harmonic oscillator can maintain their own existence for longer time than themselves when is kept on single harmonic oscillator in the only formality of QCD without tetra-quark and penta-quark.

Besides, the quark correspondent to the number 1 item of another single harmonic oscillator of Fig. 8 survives longer than itself when works in the only formality of QCD without tetra-quark and penta-quark.

This experimental confirmation on the above inference concerned with the holographic relativity could be a scientific proof of the existence of the 10(11)-dimensional large extra dimensions and the 6(7)-dimensional moduli spacetime as curled-up dimensions as well as the supersymmetry between universe and human mind. These tetra-quark and penta-quark act on quark confinement by the plus pressure.

The constant flow of one-dimensional time between holographic topologies is immanent in the new D(3+1)-brane and 6(7)-dimensional micro-cosmos. The new D(3+1)-brane and 6(7)-dimensional micro-cosmos exerts the repulsive power against the existing macroscopic D(3+1)-brane, since one-dimensional time of the existing macroscopic D(3+1)-brane not warped does not accept slant potential well of macroscopic planck-instanton soliton of the former spiraled and regular fluid with breached pair between 'data' and 'view' and in addition, the same monopole of one-dimensional time between both repels each other. As a result, the new D(3+1)-brane and 6(7)-dimensional micro-cosmos exhibits Meissner effect pushing out the gravitational field of the existing macroscopic D(3+1)-brane. In other words, the Meissner effect of the new D(3+1)-brane as a 'superfluidity' with breached pair regular fluid is the entity of anti-gravity. This Meissner effect between the both is the immediate cause of dark energy that inflates the universe at an increasing tempo.

All in all, dark energy that inflates the universe at an accelerating pace heads from the repulsion between the 'superfluidity' with breached pair regular fluid of the new D(3+1)-brane and the existing macroscopic D(3+1)-brane. Dark energy is not power pulled outward by vacuum energy, hereupon the dark energy can not pull galaxy or star to pieces, but rather

create more and more spacetime and ordinary matter forever.

The macroscopic planck-instanton soliton between the numerous 6(7)-dimensional micro-cosmos takes root in the macroscopic instanton soliton between the infinite 6(7)-dimensional moduli spacetime as a rigid body.

That is, the macroscopic planck-instanton soliton of the former accedes to the macroscopic instanton soliton of the latter, and then the macroscopic planck-instanton soliton of the former repels the macroscopic instanton soliton of the latter owing to the same poles between the both. Thereupon, galaxy turns around on its own axis.

As mentioned before, the D(3+3)-brane of the supergravity black hole as the extended dimension acts on multiple-anyon. The macroscopic instanton soliton of the infinite 6(7)-dimensional moduli spacetime does on multiple-anyon, too. Multiple-anyon of the former pushes aside that of the latter due to the same pole, whereupon the latter swirls about. Such a gyration of the macroscopic instanton soliton of the infinite 6(7)-dimensional moduli spacetime makes slant potential well of another single harmonic oscillator of the macroscopic planck-instanton soliton of 6(7)-dimensional micro-cosmos spiral. This spiral movement of the macroscopic planck-instanton soliton of the 6(7)-dimensional micro-cosmos presents helical arms to galaxy.

Since the above two repulsive action, *i.e.* rebounding between the same pole of the macroscopic instanton soliton of 6(7)-dimensional moduli spacetime and the macroscopic planck-instanton soliton of 6(7)-dimensional micro-cosmos and the repulsion between two multiple-anyon of the 6(7)-dimensional moduli spacetime and the supergravity black hole as the extended dimension has invisible influence on every galaxy, the two factors become just the entity of dark matter exercising gravitational force nonlocally in galaxy as 6(7)-dimensional micro-cosmos.

In the last analysis, global 6(7)-dimensional macroscopic planck-instanton soliton of the whole universe spirals as the same as only one large galaxy, and also individual 6(7)-dimensional macroscopic planck-instanton soliton does as an individual galaxy. This

individual galaxy springs from the fractal black hole embraced in the 'non-commutative time black hole in thought' drawn in chapter 2.

The 'Dark flow' discovered recently is caused by the slant potential well of the only one large galaxy equivalent to the whole scale of the universe *i.e.* the spiral movement of the helical arms of the only one large galaxy equal to the whole scale of the universe.

Namely, the great wall, supercluster and the astral bodies to be discovered in the future bigger than great wall are nothing but components of the helical arms of the only one large galaxy equal to the whole scale of the universe including the outside of cosmic horizon.

Conclusion

This interdisciplinary research established on supersymmetry between the universe and the information of human mind provides a clue to examine the unsolved universal mysteries and particle problem regarding tetra-quark and penta-quark closely. To resolve these problems, some suppositions are needed. Those are what the particles in thought are quantized into 'chronon' as time quantum which is built up in the extra three-dimensional time without space and biophoton comprised of temporal string is fluctuating in the extra three-dimensional time. The extra three-dimensional time compact the extra 6(7)-dimensions of superstring theory in the macroscopic four-dimensional spacetime.

Through the non-commutative unity between the 'non-commutative time black hole in thought' and the singularity and event horizon of the 'dilative + dilatonic black hole', that of the 'dilative + dilatonic black hole' comes compacted into Planck scale. By the Planck energy, there comes supersymmetry between graviton and gravitino.

The compacted D(3+3)-brane of the supergravity black hole is the 'spin foam' defined in Loop quantum gravity theory. The compacted D(3+3)-brane of the supergravity black hole with

conformal symmetry becomes the 6(7)-dimensional moduli spacetime.

The casimir effect of the two pairs of condensed vacuums formed in each singularity of the two 'commutative time black holes in thought' of 'data' and 'view', owing to the amplification of the rest of three factors excluded out of multiple-anyon, pulls outward 6(7)-dimensional moduli spacetime. Due to its dilation, when the Planck energy radiates outward for the macroscopic D(3+1)-brane, there comes broken supersymmetry. Hereupon, the 6(7)-dimensional moduli spacetime that includes vacuum fluctuation between three-dimensional space quantized and three-dimensional time releases the new continuous D(3+1)-brane, and then it changes into the 6(7)-dimensional micro-cosmos exercising dark energy against the existing 4-dimensional spacetime.

The slant potential well of the 6(7)-dimensional micro-cosmos presents holographic relativity as a foundation where the warped 4-dimensional spacetime of Einstein's general relativity theory is formed, which creates Tetra-quark and Penta-quark and helical arms of galaxy. The experiment through the present particle accelerator on the holographic relativity suggested for formation mechanism of Tetra-quark and Penta-quark can verify 'Large extra dimensions' and 'Compacted dimensions'. It is concluded that Universe has the supersymmetric relationship to Human spirit from the result. This demonstration means that mind exists for itself, not subordinate to matter.

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