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Can Quantum Mechanics Correlate All Natural Forces?An Experimental and Observational Approach

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Abstract

According to a previous study, mathematical set theory in analogous terms ofsymbols can be used to relate the body, mind and spiritual world to develop artificial intelligence. This paper tries to study how the natural forceselectromagnetic, gravitational, and strong-weak-can be explained by applying quantum mechanics theory. Indeed, body corresponds to strong-weak force, mind refers to the electromagnetic force, and the spirit corresponds to the gravitational force. In this paper, different quantum experiments were performed to verify the above hypotheses. First, the strong-weak forces, was tested by the Baryons mass spectrum or the quantum chromo dynamics (QCD). For the electromagnetic, and the Casimir effects were considered or the (Quantum) electrodynamics (ED/QED). A tabletop experiment was used for the gravitational force or the quantum gravity (QG). That is body, mind and spirit links with QCD, (Q)ED and QG through quantum mechanics (QM). Also these quantum theories (QCD, (Q)ED and QG are self inter-connecting through QM. Finally, the results show that we can also use quantum mechanics to "experimentally rationalize" the Penrose's philosophy and correlate all presently well-known natural forces. That is the role of "set symbols connections" mentioned in the special rationalization of Penrose's three world theory can also be tested experimentally w.r.t. the modern particle physics (in the philosophical sense). Thus, quantum mechanics is analogically as the duty of set theory in my rationalization. Furthermore, these QCD, ED and QG can be linked with Roger's three world philosophy (Plato, physical and mental) by (brain) waves or ontological mathematics. Hence, the QCD, ED and QG give birth to the unified field theory philosophically. In other words, these theories unify all natural forces and relate the elementary particles under a single theoretical framework the Roger's three world theory through the quantum mechanics and ontological mathematics behind. The outcome is one may investigate more about early universe and black hole.

Keywords: Quantum mechanics • Electrodynamics • Natural forces • Mathematics

Introduction

In July 2019, the author submitted a paper on the specific rationalization of Roger Penrose's three-world philosophy. The basis of this study was set theory or set symbols that make a special rationalization to Roger's theory. It is a kind of philosophy or perspective. As this author's best known, there is no practical evidence to show the truthiness of such philosophy. However, can this theory be verified experimentally? In this study, the rationalization is verified through a series of quantum experiments and observation. It is suggested that, analogically, quantum mechanics in physics corresponds to set theory in mathematics in the Roger's three world philosophy. It can be shown that quantum mechanics correlates atomic strong-weak forces, electromagnetic force, and gravitational force in the philosophical sense. The philosophy is verified through Baryon spectroscopy, Casimir Effects, and a tabletop thought experiment. Hence, instead of only presented theoretically and mathematically rationalization, there are also ways in which one can perform tests so that Roger's philosophy becomes true. This is also the novelty of the study artificial intelligence is feasible. However, the gap or the limitations of it is, although machine mind seems to be reasonable, it still requires time for us to develop the corresponding technology progressively and finally turns into our popular daily usage. The final machine minded result is applied to achieve the good purpose of humanity.

Experimental Section

Baryon spectrum[1]

First of all, mass spectroscopes consist of five basic parts:

1. A highly vacuumed system;
2. A sample handling system introduces a sample of investigated;
3. An ion source produces a beam of charged particles with the characteristic of the sample (chemical elements);
4. An analyzer separates the beam into its component;
5. An observer or a separator observes and collects the separated ion.

The experiment begins with a sample of investigated (chemical) elements that are injected into the highly vacuumed system. Then, the sample is vaporized by a heater and bombarded with electrons. These electrons hit the elements to produce cationic samples. Then, these samples are accelerated by electric plates and deflected by a pair of electric plates with magnetic field. By calculating the deflected angles according to the speed and charge, it is found that heavier ions and those with higher charges are deflected by a smaller amount, and vice versa. The amount of deflected ions is inversely proportional to their mass-to-charge ratio (m/z). The detector also records the m/z values for each type of ions along with the frequency. Finally, the mass spectrum for of the sample is obtained, where the relative abundance is plotted against the mass-to-charge ratio.

Next, to determine the mass against the orbital angular momentum of certain baryons called nucleons, N, it is suggested that a circular particle accelerator should be used first. Initially, the baryons are moved in a circle until they attain sufficient energy (e.g. 6.5 -13 TeV for beams of proton). Electromagnets are installed to ensure that the particle moves in a circle. When these particles are accelerated in a circular path, they emit synchrotron radiation, which strongly depend on particle mass. Hence, a detector can be used to determine the strength of the radiation and the mass can be calculated. Through partial wave analysis, all the necessary parameters amplitude, quantum numbers and intensity etc., for the required experiment are obtained. In other words, one may referenced with the incoming beam ion which is first being excited into an intermediate state (say X-) via Pomeron exchange with the target proton. X- is then determined by quantum numbers J M, where J is the spin, P and C are the eigenvalues of parity and generalized charge conjugation, M is the magnetic quantum number and reflectivity of X-. The following equation can be obtained by

[1]https://www.britannica.com/science/mass-spectrometry

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applying the isobar model [1]:

$$A(m_X,\tau)=\sum_{waves} T_{wave}(m_X)\psi_{wave}(\tau)$$

where T_{waves} is the production amptitude

where $\psi_{waves}(\tau)$ is the production amptitude

However,

$$I(m_X,\tau)=\left|A(m_X,\tau)\right|^2=\left|\sum_{\text{wave}} T_{\text{wave}}(m_X)\psi_{\text{wave}}(\tau)\right|^2$$

In addition, the total sum of the waves is given by J PC [isobar] L,

The intensity of the particle pion (or baryons) can be bounded by the maximum and the minimum values of the isobar equation and expressed in terms of L for examples-the quantum number or orbital angular momentum for example. This event is because according to the first amplitude equation, the amplitude is indeed a sum over different waves but these waves are defined by J^{PC} M^E [isobar] π L (Krinner, 2014). Thus, the rate of change of Intensity = $|J^{PC}M^E$ ∇[isobar] π L|2 but I remark there is an independent particle model .Next we may find the corresponding rate of change in angular momentum which is analogous to the force. We may further plot the graph with one against another. The result is we can know the corresponding forces distribution from the gradient of intensity and hence determine the respective masses distribution also. We may balance a seesaw between particles and apply this in the development of optical transistors (quantum computer) or the fusion reactor. In 2007, Forkel stated that.

$M^2 \propto J$, $M \propto N$ $M^2 = M_0^2 + W(N+L)$ $M^2 = M_0^2 + W\,(N+L)$

Casimir effects

Then, mass can be plotted against orbital angular momentum, L, as shown in Figure 1 [3,4]. In the next section, this author will show a comparison between predicted and experimental mass values for the baryon spectrum.

Casimir effects were first demonstrated by Chen et al. [5,6]. Initially, a high-vacuum-based atomic force microscope (AFM) was used to measure the change in the Casimir force between an Au-coated sphere and a Si membrane with and without incident light [7]. The experiment was conducted in an oil-free vacuum chamber with a pressure of approximately 2 X 10-7 torr. A polystyrene sphere coated with an Au layer of 82-nm thickness is mounted at the tip of a conductive cantilever. A specially fabricated Si membrane is mounted on top of the piezo (a piece of suitable crystal), and it is used to vary these parathion distance between the sphere and membrane (a). To excite the carriers with the membrane, 5-ms-wide light pluses are applied. By using a 100-Hz acousto-optic modulator, a clockwise Ar ion laser light operated at 514 nm is generated. These laser pulses are focused on the bottom surface of the Si membrane. The resulting Casimir forces that correspond to the carrier excitation are measured by a lock-in amplifier. The function signal generator used to generate the Ar laser pulses is used as a reference [5,6].

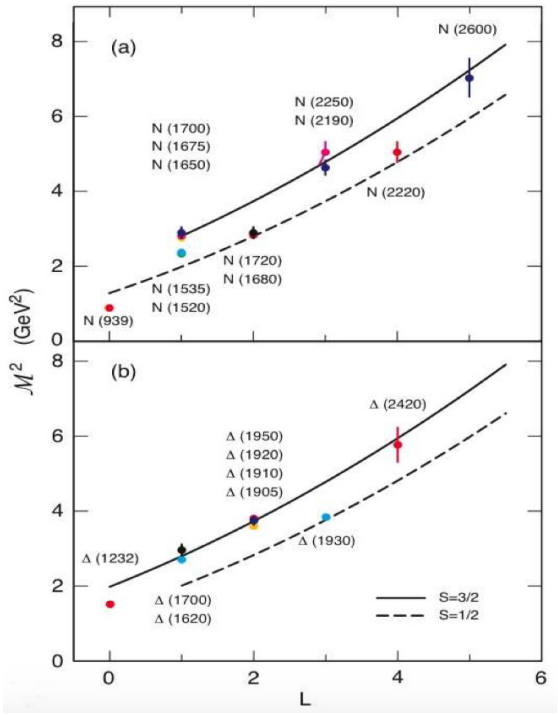

Figure 1. Light baryon orbital spectrum for (a) N ∗ and (b) Δ∗. The dashed curves correspond to baryon states dual to spin-1/2 modes in the bulk, and the solid curve corresponds to states dual to spin-3/2 modes (de Teramond and Brodsky, 2005).

Tabletop experiment[2]

A thought experiment, known as the tabletop experiment, is discussed in this section. The experiment considers two spherical crystals, which are most likely (micro-) diamonds that can become entangled quantum mechanically. This is due to the mutual gravitational attraction between them Entanglement is a quantum phenomenon in which particles become inseparably entwined and share a single physical description. Whenever different possible states coexist, it is known as "superposition;" this is a characteristic of quantum systems. For example, the spin directions of particles are always opposite. In other words, for a pair of entangled particles, the spin of one particle will point upward and that of the other particle will point downward, or vice versa. However, the outcome cannot be determined in advance. The entanglement of two objects can only be explained by a force between them gravity or a quantum interaction mediated by gravitons[3].

The micro-diamonds are modified by artificially introducing a defect, called a nitrogen vacancy centre, in the centre of each crystal. This is because nitrogen atoms are located near these defects. The two crystals are separated by at least 100 microns. They are kept aloft by laser beams. To ensure the superposition of the spinning of the particles in the defects, magnets and microwaves are used. Simultaneously, crystals should be cooled so that the induced heat does not disrupt the superpositions. In addition, the particles are stored in vacuum to prevent collision. Hence, all interactions, except the gravitational pull of the crystals, are avoided.

Finally, the crystals are dropped simultaneously to detect quantum entanglement. At the end of the drop, the crystals are illuminated using with suitable wavelength lasers. If the crystals fluoresce, the particles in the defects are spinning in one direction. If they do not fluoresce, it implies that they are spinning in the other direction. Indeed, the spins of these crystals are in the same direction, implying that their masses are entangled. Further, if only the action of gravity can cause entanglement, it must be quantized, or gravitons must exist.

Experimental Results

Achievements obtained from Baryon's spectrum

The achievements of Baryon's spectrum are compared with the predicted results of the experiment mentioned in the previous section. These achievements are shown below in Figure 2 Baryon spectrum obtained experimentally [8]. The above experimental results are compared with the predicted results in the following discussion section; their implications are also described.

Experimental achievements for Casimir forces

The Casimir forces measured during the aforementioned experiment discussed in the previous section are shown in Figure 3.

[2]https://www.insidescience.org/news/tabletop-experiment-quantum-gravity-0

[3]https://www.quantamagazine.org/physicists-find-a-way-to-see-the-grin-of-quantum-gravity-20180306/

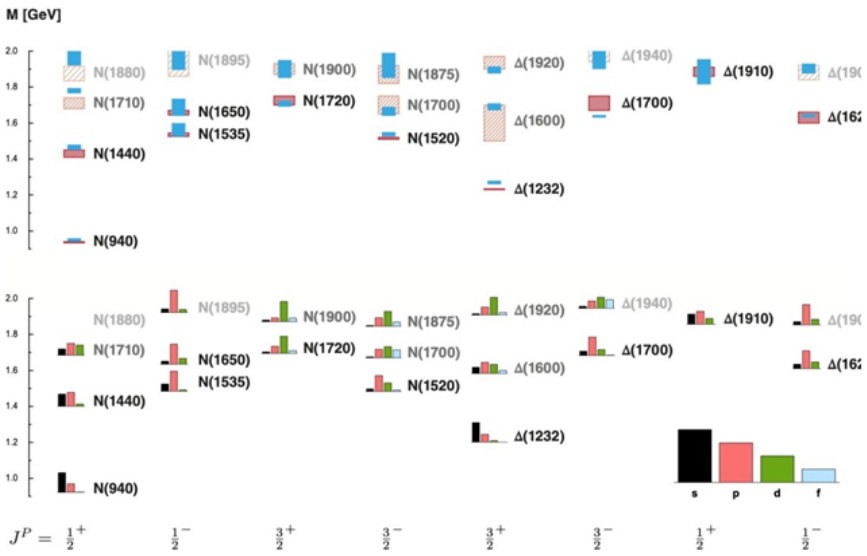

Figure 2. Experimental Baryon Spectrum [1].

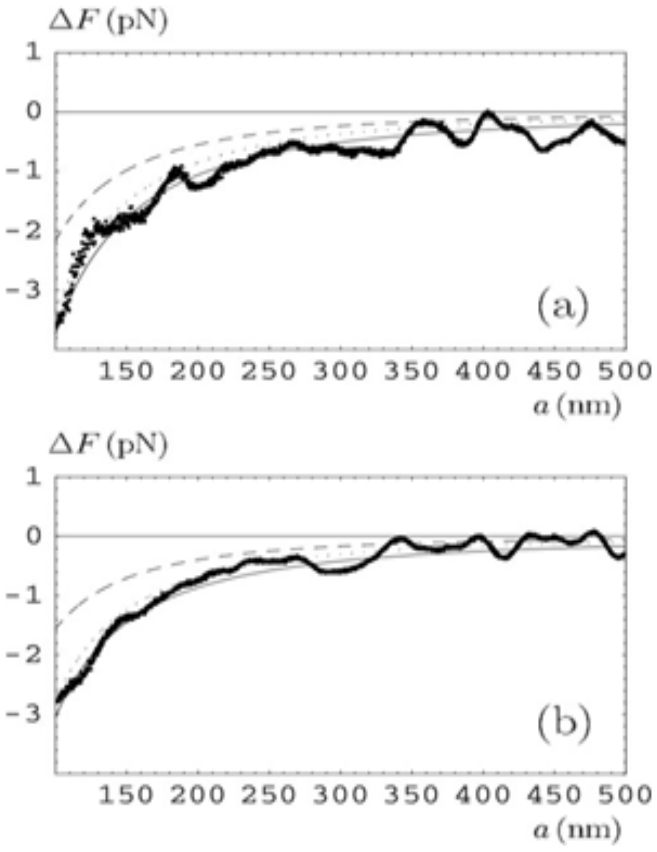

Figure 3. Casimir forces measured in Chen's experiment [2,3].

Experimental results similar to those of the tabletop

Several methods, other than a tabletop thought experiment, can be used to show the existence of gravitons. During the two photon beams (pp) collision experiments in Large Hadron Collider (LHC), a hadronic jet was observed along with a graviton emission. This is because there was missing energy; this points to the existence of the hypothesized particles. Figure 4 plots the detected missing energy against the high--dimensional gravity scale M* along with a hadronic jet. The emission of Hawking radiation in the bulk under tensor gravitational modes by a high- dimensional black hole with one angular momentum component can also be considered. According to Kanti [9] the following energy emission and angular momentum emission

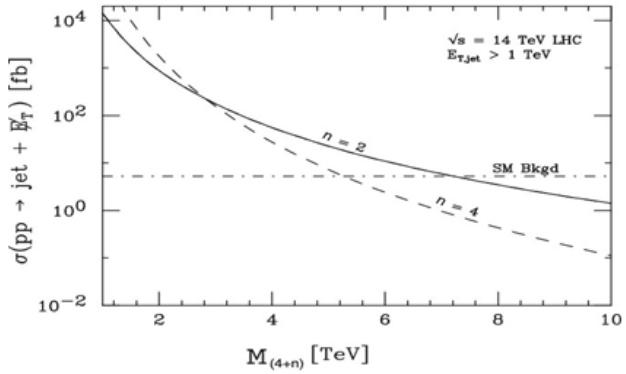

Figure 4. Missing energy against the high-dimensional gravity scale during a photon-photon (pp) collision [4].

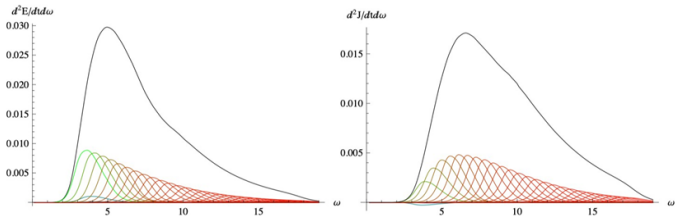

Figure 5. Tensor type graviton observed from Hawking radiation vs different quantum numbers [5].

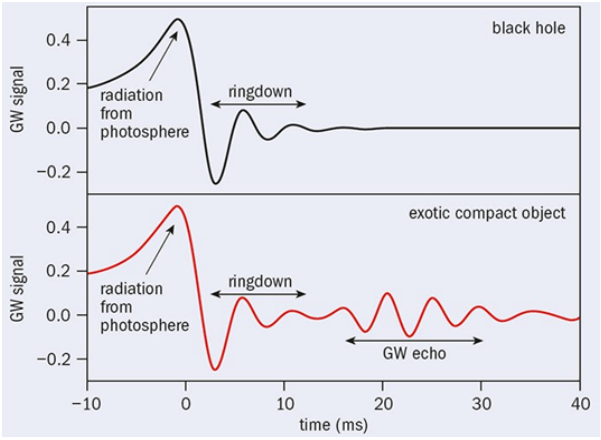

Figure 6. Gravitational wave detected from a small star falling into a massive compact object. GW echo was recorded for a case without a horizon but with a photosphere [6].

can be obtained for tensor type gravitons for D = 9, a* = 1.2 (black line) for different angular momentums (Figure 5). Finally, the gravitational wave by Cardoso, in 2017, can be considered. The signal de- scribes what happens when a small star falls into a black hole. Figure 6 shows the echoed wave's results.

Discussion and Implications[4]

Both the predicted and experimental results of our Baryon spectrum can be explained well by quantum chromo dynamics (QCD). According to the results obtained by Roberts et al. [10], the mean absolute relative difference between the predicted (or the calculated) values for the baryon (0, 1/2+) ground states and the empirical masses is 5.2 (2.8%). While for the baryon (0, 3/2+) states, this difference is 2.6 (1.6%). The average of the above two states differences is 4.2 (2.7%) which is in the acceptable error range. In other words, the predicted values in Figure 1 fit well with the experimental values in Figure 2 for spin 1/2 and 3/2. String theory and the Standard Model of particle physics is related; this is known as the duality (Evans, 2005). String theory is the description of the sub- atomic world in terms of lengths and loops of infinitesimal strings. They exist in higher spatial dimensions, instead of our present three dimensions. The Standard Model describes strong–weak and electromagnetic forces (quantum electrodynamics) in terms of gauge theories. All interactions between elementary particles are mediated by "gauge bosons". However, the Standard Model does not consider gravity. The String-Standard Model duality may lead to a new gauge theory for the strong force-QCD.

In QCD, mass less gluons are considered to be mediators for the interactions between the six quarks (up, down, charm, strange, bottom, and top). The larger the distance between two quarks, the stronger the nuclear force between these particles. Thus, it is difficult to separate them at long distances. Although it is difficult to solve QCD equations owing to such so-called asymptotic freedom, the theory finally has been tested because of the developments in computing (Evans, 2005). That is, QCD is strongly coupled in the calculation of observable particles masses, or QCD particle spectrum can be calculated from the dual theory using simple instruments. As mentioned above, the predicted outcomes of Baryon particles agree well with the experimental results; this implies that the QCD theory is the best explanation for this situation. Figure 3, shows the differences between Casimir forces in the presence and absence of light against separation for different absorbed powers. In the upper part of Figure 3, the power is for 9.3 mW, and the lower one for 4.7 mW. The measured differences <Fexpt> are shown by the dotted line, and the theoretical ones are shown by the other lines. It is found that the magnitude of the Casimir force differences attains maximum values at the shortest separations and decreases until the separation is minimum. The same trend is observed for absorbed laser power. To explain this phenomenon, theory of electrodynamics is considered. Casimir effect arises from the quantum theory of electromagnetic radiation. The theory states that the energy between two objects in an empty space may produce a tiny force. In other words, oscillating electromagnetic fields can be described in terms of different standing wave fields in a vacuumed metal box. Classical physics states that whenever there is no field in the box, there will be no energy in any normal mode. However, quantum mechanics predicts that the vacuum still contains normal modes of vibration, and each possesses a tiny amount of energy, called the zero-point energy (without any field). The number of modes in a closed box is smaller than those in the outside space; hence, the zero-point energy inside the box is smaller than that outside. Thus, a finite tiny inward force is observed on the walls of the box. This explains the experimental results of the previous section. Hence, the electrodynamics theory can be used to explain the Casimir forces.

The quantum gravity theory hypothesizes a quantum of gravity or an elementary particle that mediates gravitational force (gravitational interactions carrier at the quantized level) graviton. By quantum gravity, the study refers to the theoretical physics that de- scribes gravity based on the principles of quantum mechanics while considering quantum effect. The virtual particle is hypothesized as an analogous diagram for the gravitational interaction between two electrons that requires a graviton exchanged. This is similar to the emission of a photon when an electron interacts with another electron. The standard model is a quantum field theory that fits to the observed data with the prediction of graviton when a photon interacts with a photon. In the practical experiment performed by LHC, such results give us in the detection of missing (or loss of) energy. This indicates the existence of the graviton. This is because gravity becomes weaker when there are more dimensions and leads to the more space for the gravitons to escape from the gravitational field[5]. According to the research by the COMPTEL instrument, the decay of bulk gravitons to photons will not generate a spike in the energy spectrum of the photon background. A large amount of gravitons are expected to be produced from the thermal radiation brane well before the nucleo-synthesis. The production starts at the temperature of approximately 1 MeV and increases with the temperature. Finally, at energies higher than the string scale, new spectacular phenomena related to string physics and quantum gravity effects are expected to occur. This may include micro-black whole production. Therefore, a particle accelerator should be used for the study of the above two theories [10].

The second experiment to study quantum gravity is the investigation of the emission of tensor-type gravitational degrees of freedom from a high-dimensional, simply rotating black hole in the bulk. The experimental results shown in Figure 3 indicate that a bulk of tensor-type gravitons have been detected in Hawking radiation. The outcome implies that the black hole is evaporating through Hawking radiation. This may contradict with quantum mechanics. By establishing a correlation between the string theory and anti-de Sitter (adS)/conformal field theory (CFT), the information paradox associated with the black hole can be solved. For the paradox, one may refer to the fact in which contra- diction appeared between Hawking's calculation and the unitarily postulate of quantum mechanics. If black holes with Ads/CFT are considered, this will then correspond to a configuration of particles on the boundary of adS space. These particles obey the rules of quantum mechanics so as the unitary fashion of QM. This will also apply to black holes with respect to the principles of quantum mechanics. Hence, the paradox was completely solved in 2005.

Finally, many experts believe that Einstein's general relativity is not complete[6]. It requires quantum mechanics as a supplement. By quantum mechanics, the author is referring to the scientific theories related to the behaviour of matter and light at the atomic and subatomic level. As mentioned above, the inclusion of quantum mechanics in general relativity leads to the information paradox. This is because relativity states that everything (including information) will be lost when it comes within the event horizon of a black hole. However, quantum mechanics shows that information cannot be created or destroyed.

Therefore, if one can detect the gravitational wave echo, black holes should not be surrounded by a classical event horizon but a Planck quantum mechanical scale-like structure. This is because the structure acts as a firewall that will destroy any object passing through it, while retaining the object's information outside the black hole. Thus, the gravitational wave echo should be measured (Figure 6). Any outgoing waves generated between the membrane and the event horizon will bounce off the barrier and pass through the horizon. The information will never be seen again.

In summary, this study suggests various testable (thought) experiments from the above three to verify the quantum theory proposed thus far. First, a high energy particle collision should be performed in a particle hadron collider. This can produce a bulk of gravitons, and finally induce a micro-black hole. Next, both tensor gravitons and gravitational waves (echo) are detected from manmade black hole, similar to the experiments discussed above. These imply that our gravity has both particle and wave duality. Therefore, it can be explained by the quantum mechanics theory. The tensor-type gravitons act as the energy carriers in the context of Hawking

[4]https://cerncourier.com/linking-waves-to-particles/

[5]https://www.sciencedirect.com/topics/physics-and-astronomy/gravitons

[6] https://physicsworld.com/a/echoes-of-gravitational-waves-could-point-to-quantum-gravity/

radiation during the measurement. The black hole is expected to disappear through the emission of gravitons. While the gravitational wave (echo) is detected, it shows a Planck-scale structure on the event horizon of the man-made black hole. All these evidences (if being tested to be true), imply that the gravitational field must be explained by quantum mechanics. A suitable quantum gravity theory must be developed to relate gravity and quantum effects.

All matter is made up of building blocks of chemical elements. In turn, these elements are governed by their internal and external forces[7]. Naturally, our bodies consist of those very same chemical elements and are related to QCD. With regard to our nervous system, its functions can be mapped via electrical signals. Indeed, nervous cells conduct current in extremely small quantities. Electricity is necessary for our nervous system to send signals throughout our body and to the brain. The result being that we can move, think, and feel[8]. As such, electromagnetic forces play an integral part in the human nervous system and, by association, our physical minds. In 1868, Darwin explained that our emotions are influenced by electricity[9]. He showed that behind (Q) ED, through QM, there is a connection between our minds (feelings) and electricity. Hence, this author believes that feelings, such as logic and sense in terms of the mind or non-physical heart (a person's attitude or character) usually refer to electrical current generated inside our own bodies. Conscious force always works on all entities. This is because all matter can be considered to be conscious[10]. The double-slit experiment is an example of the relation- ship between the spirit and QG through QM. As such, this author believes consciousness or the spiritual mind is connected to gravity. Putting it another way, one might consider the conscious mind as the non-physical part of a person's spirit after death[11]. All of the above shows us that QM connects body, mind, and spirit with QCD, ED, and QG, respectively. In addition, QCD, ED, and QG are themselves inter-connected through QM. Thus, QM plays analogically the same role as set theory in this author's rationalization of Pen-rose's three world's theory. The periodic table can be expressed in Fourier terms of (brain) wave functions (ontological mathematics)[12]. Therefore, this author believes that QCD among chemical elements can also be represented by ontological mathematics. To be more precise, chemical elements that work under QCD link well within the mathematical world. The wave functions (sine and cosine) perfectly depict all of the world's matter, meaning that it is possible to connect ED theory with the physical world through ontological mathematics. This is because the six basic elementary boson particles can only be photons (Hockney, 2015) together with electrons best describe the model of our physical elements. If the ED theory connects the physical world through (brain) wave functions, even electrons can be expressed as wave functions. Brain waves are associated with our physical brain. However, there are also "mind waves" which connect our dimensionless minds with our non-physical minds[13]. Electromagnetic (EM) waves or true light waves can be linked with brain waves. Moreover, photons are carriers of EM forces or, in other words, the forces of ontological mathematics the mental forces of the monadic mind. This author proposes that QG is associated with the mental aspect of Penrose's three worlds theory through wave functions (or Euler's 'God's equation'). Hence, QCD, ED, and QG are connected to the mathematical, physical, and mental aspects of the three world's theory. In other words, because the strong (weak) force is explained by QCD, electromagnetic force is explained by ED, and gravity is explained by QG, it can be philosophically unified under a single theoretical framework, that of Roger Penrose's three worlds theory, QM, and the ontological mathematics behind it. An outlined proof of unified field theory is thus obtained, however not in abstract mathematics. One can even go a step further and create a theory of everything. These philosophies can be generalized into the study of our universe's origin and of cosmology. In addition to rationalization, this paper also provides evidence showing that it is possible to practice Penrose's philosophy in the real-world through the aforementioned experiments. These being examples of direct realization of such a philosophy.

The beauty behind quantum mechanics assumptions

It should be noted that Einstein proposed his gravitational and general relatively theories by assuming the space-time continuum. However, according to this author's master's thesis (2014-2015, HKU) even the cultural continuum model can be disproved[14]. In fact, this can also be extended to astronomy. If true, our assumptions about the space-time continuum would prove to be incorrect. That is, Einstein's gravitational theories may be wrong or at least need modification. While general relativity predicts gravity very well through curved space-time, it fails at the atomic level. According to modern QM, atoms are somehow quantized. This allows for prediction of the atomic world. These two fields of study give rise to the question: "Will objects be attracted by electromagnetic force in the same way as the gravity of a nearby planet?" However, this leads to a subsequent question as to whether physicists should try to unify all of the natural forces.

To unify both general relativity and the atomic-level, the universe must be assumed to be discrete. This results in loop quantum gravity a quantum gravity theory that at- tempts to link Einstein's theory of general relativity with QM. Although loop quantum gravity assumes that the universe is discrete, Pithis [11] believes that discreteness can be seen as a form of mathematical tool. Hence, the continuum path integral can be transformed into a discrete form. In practice, we can use programmable logic controller (PLC) for the interchange between continuous time-series and the discrete quantity or the converse. However, one flaw in loop quantum gravity is that the spin network does not incorporate any time dimension. Crucially, this theory has not been subjected to any experimentation as of yet. It is worth noting that there is another possible means of unifying general relativity and QM that of assuming there is a five-dimensional universe instead of four-dimensional space-time. However, the case of higher dimension is still controversy. The recent discovery of the X17 particle fifth force carrier shows the possibility in the existence about the fifth dimension.

Conclusion

To conclude, Roger Penrose's three-world philosophy can be experimented or observed (and maybe even proved) in the real world. Quantum theory is analogous to set theory in this special rationalization of Roger's three-world philosophy on the subject of physics. This event can experimentally conclude the quantum nature of our mind. We may even build a quantum robot by the use of the quantum mind that controls the quantum computer as an example [12]. Furthermore, one may even apply my Butterfly Effect philosophy (a type of futurism) in the simulated prediction of flipping a quantum coin [13]. The implication is the establishment of a practical memorization system for the quantum computer. One can then verify the proposition through different quantum chromo dynamics, quantum electrodynamics experiments

[7] https://www.livescience.com/48575-strong-force.html

[8] https://www.graduate.umaryland.edu/gsa/gazette/February-2016/How-the-human-body-uses-electricity/

[9] https://www.darwinproject.ac.uk/commentary/human-nature/expression-emotions/emotion-experiment

[10] https://ell.stackexchange.com/questions/78282/whats-the-difference-between-mind-and-spirit

[11] http://www.bbc.com/earth/story/20170215-the-strange-link-between-the-human-mind-and-quantum-physics

[12] https://books.google.com.hk/books?id=S9JeCAAAQBAJ&pg=PT21&lpg=PT21&dq=-gravity+forces+and+mental+world&source=bl&ots=SCmfx_O2aN&sig=ACfU3U1Qf6TxDpbMAD8hfSY7PYkkb0d9Ow&hl=en&sa=X&ved=2ahUKEwjLm-qTWx-vjAhXZPXAKHV2NADAQ6AEwAHoECAsQAQ#v=onepage&q=gravity%20forces%20and%20mental%20world&f=false

[13] https://books.google.com.hk/books?id=wyqaCgAAQBAJ&pg=PT88&lpg=PT88&dq=strong+weak+force+and+mathematicl+world+and+ontological+mathematics&source=bl&ots=N_FzM5BHOA&sig=ACfU3U38aF9RpsjWTxlXuPXCEB5zS7Usvg&hl=en&sa=X&ved=2ahUKEwjm_rXH6u3jAhVIE4gKHfvGA3oQ6AEwDXoECAgQAQ#v=onepage&q=strong%20weak%20force%20and%20mathematical%20world%20and%20ontologi cal%20mathematics&f=false

[14] https://www.scientificamerican.com/article/evidence-of-new-x17-particle-reported-but-scientists-are-wary/

as mentioned in the previous sections. While one may observe the effects of graviton loop quantum gravity via my suggested three experiments (or observations), although the concept loop quantum gravity itself has not been proved or disproved. In this sense, quantum mechanics can correlate all of the well-known natural forces in the field philosophy of science or the assumption in the fact that electrons do exist (except the most newly discovered fifth force which needs more investigations about the X17 particles or the fifth dimension). To be precise, when the electron and graviton conjectures are accepted, one will get my aforementioned elegant and consistent "quantum mechanics can link all-natural forces" outcomes. All these experiments and observations have led to go ahead a step that: there is a unifying theory behind Einstein's gravitational theory and quantum mechanics that is yet to be discovered. Based on the depicted picture in outlining unified theory (from Roger's philosophy), one may further extend the theory into a unified theory of everything. It can help us to understand some current hot topics in physics like dark energy, early universe and black holes or even time machine etc. One of the implementations from black-hole's research is the propulsion engine. The mechanism is based on the pair creation modelor the Penrose process[15]. Hence, human beings can travel freely in the universe space. However, as this author has mentioned at the beginning of the paper, the application of such new technology requires time to develop and becomes popular. This is because the pair-creation model has been developed for over thirty years but not yet have a practical and efficient spacecraft propulsion engine for a long-distance universe space travel. This author believes the existence of the creator God. If one applies this author's proposed Butterfly Effects philosophy, one may have the probabilities for those cosmology constants which correspond to the domino sequences of our present universe. But one may get other probabilities for other cosmology constants which relate to another form of the universe (such as without life form etc.). Conversely, from the observation of our universe, one may find out different cosmology constants w.r.t their corresponding probabilities. Hence, one may show the existence of the creator God. This is very interesting for people who study the origin of life such as the theory of creationism and evolutionism. Then, last but not least, based on Roger's three- world philosophy and my hypothesized realization, all experimental evidence, detections, and observations may also be extended into the religion sense in Christianity Father: Jehovah, Son: Jesus and the Holy Spirit. Or one may have the theory of Trinity.

Remarks

With my Butterfly Effect Philosophy, one may use it under the reference to the environmental changes parameters in the universe, to predict human beings' future. Mars is a good case study for such kind of hypothesis. This event is because some experts propose that ancient Mars' environment has once at a time similar to our planet earth. However, excess amount of carbon dioxide emission made it turn into the present status. Thus, if one can collect sufficient amount of the climate and environmental changes parameters, one may consequently determine the future face of our planet Earth. Conversely, if one estimates the future face of our planet Earth from the past historical data, one can find out how our present climate and environmental parameters may change. One may extend our determination from the planets to the whole universe for the prediction of its future according to those parameters observed and detected. Then, we human beings can make a better preparation for those future changes. Similarly, with past historical data and the future universe, one can verify our present universe parameters observed and detected.

With reference to Figure 7, people may use their conscious to control moving charges over a magnetic field. Indeed, if conscious can be expressed in terms of wave functions, our mental world is linked to spirit by set theory, then the spirit is connected with the (quantum) gravity theory through particles, according the general relativity, one can use conscious to control a massive object (particle) over the gravitational field and cause distortion

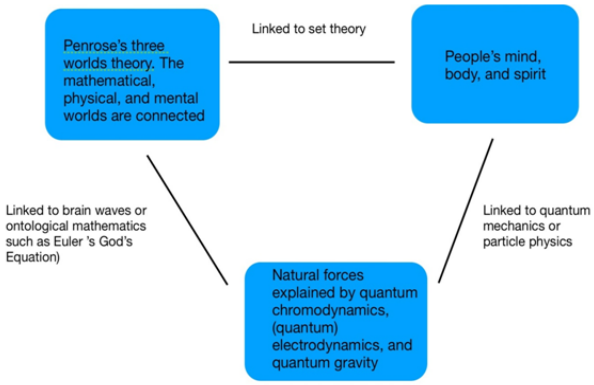

Figure 7. How our mathematical, physical, and mental worlds are connected to the body, mind, and spirit, together with the Four Fundamental Forces of Nature (electromagnetic, gravitational, strong nuclear force, and weak nuclear force).

to space and time. Similarly, when one use his/her conscious to take over charged particles under the strong magnetic field, the corresponding strong magnetic force will be induced, F = (qV) B. The induced magnetic force will also cause a distortion to space-time and hence people can travel through it, or a space-time machine (through the controlling the strength of B-field and the enhanced gravity etc.) just has been started.

Another important contribution of my papers is that, once we can find out most of the cosmology constants of our present universe, we can determine the consequence series of domino effects. Then according to the results of chapter 18, the series of domino effects are indeed causal relations. These relations can then be approximated by the regression method. Thus, we may find the model to our present universe. Or to go ahead a further step, one can model different universes with different sets of cosmology constants etc. Hence, our scientists can make more accurate explanations to those future cosmological measurements. Human beings may finally have a better understanding in the formation of our galaxies. Conversely, when we observe the structures from our galaxies, one may find out the corresponding suitable model in our galaxies as a kind of evaluation to the previously found universe model that mentioned early in this paragraph. Indeed, the above mentioned is a kind of symmetry which is the key to nature and natural philosophy[16]. According to Standard Encyclopedia of Philosophy, symmetry can be broken down[17]. The symmetry itself has lots of application such as classification etc. But how one should understand the importance and status of physical symmetry is really a challenge to our physicists and philosophers.

Finally, we note that Eric Weinstein had developed a Geometric Unity Theory. The theory indeed tries to balance those conflicts between Einstein's field equation (for the gravity theory), Yang-Mills equation (for the strong-weak force) and the Dirac equation (for the electromagnetism force) and hence establishes a unity. From the theory, he also develops some physical and mathematical implications. For the physical one, he predicts the existence of a 3/2 spin particle and a series of other particles. For the mathematical one, he further extends the Einstein's geometrical mathematics to describe his own mathematical structures. However, these predicted particles suffix to the proof of their existence by feasible experiments. Therefore, a UC, Berkeley professor, Edward Frenkel told us "I think that both mathematicians and physicists should take Eric's ideas very seriously," he said. "Even independently of their physical implications, I believe that Eric's insights will be useful to mathematicians, because he points to some structures which have not been studied before, as far as I know. As for the physical implications, it is quite possible that this new framework will lead to new answers to the big questions, after necessary work is done to make precise predictions which can be tested experimentally[18]."

[15]https://medium.com/starts-with-a-bang/how-do-black-holes-evaporate-5463db-da6832

[16] https://www.lindahall.org/media/papers/fernandez/symmetry_review.pdf

[17] https://plato.stanford.edu/entries/symmetry-breaking/#SymmBrea

[18] https://www.theguardian.com/science/blog/2013/may/23/roll-over-einstein-meet-weinstein

To be precise, the questions like “Can my quantum mechanics that analogous to set theory in linking the three natural forces strong and weak, electromagnetic and gravity be an alternative to Eric’s geometric unity theory?” Does my analogous independent of Eric’s geometric unity theory? Are there any modifications to the Eric’s one such that these amendments can mitigate my analogous? Or the creation of a hybrid special class theory between my analogous and the Eric’s one? All of the above seem to be interesting issues for our researchers to discover in future or the fully investigation in the foundation of physics.

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