The Theory of existences

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Abstract: I introduce some new concepts on the perception of physical existences, based on new interpretations of quantum mechanical wave functions. These new concepts remove the imbalance that we earlier had with regard to the physical existences. A new understanding about Gravity is presented. This understanding explains why gravity does not have a force-carrying particle. These concepts also lead to decipher the cosmological concepts, dark matter and dark energy. It is found that time can exist even before the big bang.

Preface

It is true that the existence of the physical universe is real. If asked whether the existence of the physical universe is positive, negative or both, most of us may reply that it is positive. However, I say that the existence of physical universe is composed of two components, of which one is a positive existence and the other is a negative existence. This may be a startling idea. However, if you read through the reasoning discussed below, you may get convinced. Moreover, this understanding leads to the clue on the cosmological findings, dark matter and dark energy.

We use negative quantities mostly in a simple sense. For example, if we quote a negative distance, we mean that its direction is opposite to that of a distance that is taken to be positive. There is nothing fundamentally different between these positive and negative distances. Similarly, a negative time would mean past with respect to a point of time, if positive time means future. Arithmetic sum of these positive and negative quantities simply means a shifting in the corresponding ray of distance, time or any other quantity concerned. Again, I remind that we usually take for granted the existence of everything physical, to be positive. There is a problem in this assumption. If the physical existences are positive, where did they come from? If they came from nothing, what happen to the conservation? This is an imbalance or asymmetry in our notion of existence. I would present my solution to this problem.

For a complex quantity, x+iy, we have the notion of norm as x^2+y^2. The square of real part is x^2 and the square of imaginary part is $(iy)^2 = -y^2$. However, we expect to have something 'positive definite' as the norm of the complex quantity. Hence, we define the norm as the product of itself with its complex conjugate so that the negative sign on the square of the imaginary part is made positive. Thus, we get the norm as, norm = $x^2 + -(-y^2) = x^2+y^2$. According to me, this factitious change of the sign of the square of the imaginary part has concealed many physical facts. Next, I want to discuss the interpretation of the complex wave functions of quantum mechanics.

Quantum Wave Functions

The norm of the wave function gives the probability of existence. However, why should we consider the norm that we obtain by the illicit combination of the real and imaginary parts? Rather, we should consider the squares of the two parts separately. I say that the two parts describe independently the existences of two components of the system that they represent. The squares of the real and imaginary parts are positive and negative respectively. This implies that the existences that they represent are positive and negative respectively. Positive and negative existences mean that they are opposite to each other in all respects, the space, mass, charge etc attributed to them. We have to understand this concept carefully. We are trained to think of negative existence as something unrealistic as if we know really how a positive creation comes into existence.

Our customary mind would take the positive existence to be something normal and the negative existence as something strange, wild or too speculative. However, the fact is that there is no privilege between these two existences, in the picture presented by me. From the description, you cannot identify any priority given to either of the existences. Any privilege identified with the positive existence could be because of our biased system of thought. Otherwise, the two existences are similar. I REPEAT, THE TWO EXISTENCES ARE SIMILAR. We do not have to attach the positive existence that I mention here to normal existence and the negative existence that I mention here to something imaginary. BOTH ARE EQUIVALENT.

Why should we have this interpretation?

There are many advantages that we obtain as a consequence of this interpretation, some of which I discuss in the following.

Understanding spin

Our conventional interpretation says that spin is an intrinsic property of elementary particles [1], which comes as an outcome of quantum mechanical analysis. However, it does not give any physical interpretation for spin and warns that you cannot imagine spin as a revolving charged sphere. Neither do I advocate interpreting it so. I see according to this picture, that the spin is the time dependent variation of the existence-states. This interpretation also leads to an interesting interpretation of time and this idea is discussed later in this article. The spin of, say, an s-electron is the time dependent variation of its existence-states with a period of π/ω. Please refer to my web page, 'Quantum Theory of existences ' for the gif illustrations of these ideas. Illustration 2 of the web page illustrates the spinning of an s-electron. Illustration 1 illustrates the two existences decoupled. The two colors, light blue and orange are chosen to represent the two existences; the fading and growing of colors in illustration 1 means the disappearance and appearance of a state with time. The gradual change of colors in illustration 2 represents the gradual transformation of the states. Illustration 4 illustrates two s-electrons spinning in opposite directions.

The old interpretation of wave functions allows the arithmetic summation of these two parts. As a result, we get monotonous pictures of the s-orbitals and p-orbitals as static, spherical and ring-like shells.

Angular motion of electrons in atoms

Similar interpretation for a p-electron with non-zero 'm' value gives results that are more interesting. The electron in an atom with a non-zero value for quantum number 'm' has a magnetic moment as if it has angular motion. However, our old quantum mechanical interpretation imposes that orbital motion also, like spin, is an inherent property of the electron and nothing is moving in the classical sense and we should not interpret an angular motion of the electron. However, we logically expect an angular motion since the electron is having a magnetic moment. According to my interpretation, we can see the angular motion, as shown by the factors $\cos^2(m\phi+\omega t)$ and $-\sin^2(m\phi+\omega t)$, in the squares of the real and imaginary parts. This is illustrated in illustrations 3 and 5.

According to the old picture where we take the norm as the product of the wave function with its complex conjugate, these factors are summed up with suitable change of sign to get unity independent of time and hence, we miss the vision of this angular motion.

What is the source of all the physical existences?

I do not say that the source of the physical existences is nothing because it means violation of conservation. **The source is something subtle that contains all the physical creations subtly and all the physical creations are brought out to physical existence from this subtle source.** My interpretation of wave functions discussed above avoids the violation of conservation since it tells that every physical existence is actually a combination of two mutually opposite existences. The source of these existences is something subtle. All the physical creations are created from it. I discuss this idea next.

The origin of universe

Before Big bang, there was no space, mass etc, in short, no physical universe. However, the subtle source that I mentioned above always exists. The big bang is the process during which the creation of the physical universe from the subtle source started. The subtle source gives birth to space, particles (mass charge, etc), etc. and exists with the creations. This means that the subtle source is spreading with the space created from it. For visualization purpose, this is analogous to expanding water gel crystals. There is a speck of subtle source associated with every physical particle created from it. The subtle source gives birth first to space since all other physical creations have to be supported (held) by space.

Here, we have to remember that each of these creations is constituted of the two mutually opposite components of existences as discussed above. Thus, this theory of creation maintains conservation. If the wave function of a particle is $x(r,t)+iy(r,t)$, $x^2(r,t)$ represents one existence-state of the particle while $-y^2(r,t)$ represents the other existence-state of the particle. The simple arithmetic summing of these two terms tends to cancel each other. This implies that the net existence of the particle would vary with

time. This is contradicting the fact. Hence, these two terms should not be summed up simply, since they are the fundamentals of creation. Our old, conventional interpretation does sum up the two terms, but by changing the sign of the second term, as $x^2(r,t) + (-(-y^2(r,t))) = x^2(r,t) + y^2(r,t)$. Since the sum is a normalized quantity, we get a function that is dependent only on space and monotonously independent of time. As a result, we lose the dynamism (the understanding of the spin, revolution of electron in the atom etc) shown in my interpretation. Hence, these two terms should not be summed up.

Creation of time

We have defined above that the spinning of a particle is its transformation from one state of its existence to the other. At a given time, the transformations of existence-states of two particles spinning in opposite directions, are opposite in direction. The only difference between them is caused by a shift in time by π/ω. The existence-states and the transformation of existence-states of two similar particles spinning in opposite directions considered at time t and $t+\pi/\omega$ is exactly the same. Then, what is unique about a particular direction of spin? Since the difference between the transformations corresponding to the two directions of spins is in time, the time at which a transformation happens has to be unique. From this requirement, I understand that time also has two mutually opposite existence-states. This is consistent with the fact that all physical creations are expected to have mutually opposite existence-states for the purpose of conservation during creation, since time is also a created existence. With this understanding about the time, the uniqueness of the direction of spin becomes evident. The transformations of existence-states of all other physical creations are 'synchronized' with the transformation of existence-states of time. The direction of the spin of a particle means whether the direction of transformation of its existence-states is coherent or anti-coherent with respect to the direction of transformation of existence-state of time. In the first instance, this disparity, between the directions of spins with respect to their coherence with time appears to contradict my earlier proclamation that the two existence-states are very similar. However, this is not a contradiction since we have the freedom to consider the polarity of either of the existence-states of time as either positive or negative so that either of the spins can be viewed to be in coherence or anti-coherence with respect to time. This brings back the similarity between the two existence-states and the spins.

From these discussions, it follows that time is a creation that is connected with all the instances of all other physical creations like space, mass etc, whereas each instance of those other creations (space etc) are individualistic being connected with their corresponding speck of subtle source. This indicates that the subtle source of time is somewhat different from the subtle source of the other physical creations. Time being common to all other creations; it should exist before the big bang when other physical creations were started. Hence, time is the first creation and the subtle source of time should be subtler than the subtle source from which the other physical existences are created.

Although the two existence-states of time are inferred, the quantum of time corresponding to one cycle of transformation of time is not clear. This indicates the inadequacy in the understanding about time and the subtlety of time.

Gravity

Gravity is, according to me, the force of attraction 'within the subtle source'. Hence, out of the four fundamental forces, gravity does not need a created particle as a carrier of force. Newton stated that the gravitational force exists between instances of physical mass. However, I say that the gravitational force exists between the instances (specks) of subtle source. How can we verify that gravitation is the force of attraction between the specks of subtle source from which physical creations are made and not between the mass that is created? We can verify this by the existence of “Dark matter”.

Dark Matter

Observational cosmologists have discovered Dark matter by the gravitational force that they exert [2], [3], [4]. However, they are not able to see any luminous matter (mass) at places where they envisage dark matter.

My explanation

Newton’s law of gravitation is correct in the sense that every physical mass has its subtle source with it. However, there are portions of subtle source that have given birth only to space and not mass. They too exert gravitational attraction even though there is no created mass present in those places. Cosmologists have identified the gravitational attraction exerted by these portions of subtle source as caused by an imaginative matter. They have imagined mass associated with these gravitational attractions and call them as dark matter. In fact, only space has been created from these portions of subtle source and not any mass.

Cosmologists have mapped the distribution of dark matter. This actually is the geometry of distribution space in the physical universe.

Dark Energy

The expansion of universe was understood earlier to be simply inertial [5]. Recently, it is observed that the rate of expansion of the universe is increasing [2], [6]. This became a mystery. Physicists imagine an energy causing this acceleration of expansion of the universe. Since the source of this energy is not known, we call it 'dark energy'.

My explanation

We have discovered many physical theories in the past many centuries. These are the laws created for the physical universe. However, these laws do not bind why the physical universe and its laws are created and how they are created.

From my discussions above, I interpret that the accelerated expansion of the universe means the accelerated rate of creation of space. Since the physical laws created do not bind the act of creation, we

do not have to imagine some physical energy causing the accelerated expansion of the universe. The creation of space at accelerating rate is the cause for the accelerated expansion of the universe.

This is my understanding on dark energy.

Conclusions

I have proposed a new interpretation of the quantum mechanical wave functions. This new interpretation leads to an understanding of the spin of elementary particles. This also enables us to conceive the idea of orbital motion in atoms. Consequent to this interpretation, I have introduced the concept of subtle source, which is the source of the universe. This leads to the new definition of Gravity and explains why gravity does not require a force-carrying particle. This also deciphers the problem of dark matter. This analysis suggests that time is created before other physical existences were created. The problem of dark energy associated with the accelerated expansion of the universe is deciphered by discerning the physical laws from laws of creation.

References

[1] http://en.wikipedia.org/wiki/Spin_(physics)#Elementary_particles

[2] http://science.nasa.gov/astrophysics/focus-areas/what-is-dark-energy/

[3] http://en.wikipedia.org/wiki/Dark_matter

[4] http://imagine.gsfc.nasa.gov/docs/science/know_l1/dark_matter.html

[5] http://en.wikipedia.org/wiki/Metric_expansion_of_space

[6] Riess, A. et al. 1998, *Astronomical Journal*, 116, 1009