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A Novel Interpretation of Schrödinger's Cat Dilemma: Quantum Superposition and Space

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Abstract: ***Schrödinger´s cat thought experiment highlights the paradox of quantum superposition, which challenges classical interpretation of reality. This paper introduces a new perspective that addresses the coexistence of quantum states through an almost superposition in three - dimensional space. By building on a previous theory of space, the author suggests that quantum systems exhibit an almost simultaneity of states, which resolves the philosophical concerns raised by Schrödinger and Einstein. This novel framework negates the need for many world interpretations and provides a clearer understanding of quantum behavior.***

Keywords: Schrödinger, theory of space, superposition, coherent, decoherent, measurement problem, many worlds, arrow of time

1. Introduction

Schrödinger discussed it with Einstein in 1935 [1] as a thought experiment that reveals the strangeness of Copenhagen´s interpretation with respect to quantum superposition. He aimed to demonstrate the strangeness of the superposition of two opposing states coexisting as the dead and alive situation of its imaginary cat. The experiment involves a closed box containing a radioactive material that when decays, a detector capable of detecting a single decay, will release a hammer over a glass jar containing a lethal poison. In the box, there is also a cat that will die if the poison is released. Through this thought experiment, Schrödinger aimed to illustrate the absurd of quantum superposition, where the cat is dead and alive. He challenges Copenhagen´s interpretation of mixed states at the same instance, meanwhile, if the box is open, nature´s reality is only one; alive or dead, not both. Known as the collapse of the wavefunction or the measurement problem incapable of observing multiple states and unable to explain how the transition between multiple states to only one state happens in nature.

2. Analysis

The quantum dilemma is not being alive or dead at the same instance, it must be focused on if the decay happens and didn´t happen as a superposition of states. The issue is circumscribed to a quantum system and not to macro systems. The rest of the experiment is a straightforward macro situation. The decay is detected, this detector activates the hammer, the jar gets broken, and the cat breathes the poison and fatally dies. It is also not about whether the experiment is observed or not. The decay is a natural quantum phenomenon of nature and does not depend on observation. It´s a consequence of interactions and physical conditionings to the quantum systems. The Poisson distribution explains this probabilistic event. The universe has existed billions of years without the presence of humans, quantum decoherence has always been happening with or without observations. The Sun was formed about 4.6 billion years ago with quantum events/fusion in its core, radiating photons and cosmic rays with no need of an observer or awareness. In the specific case of the decay of radioactive materials contained in our Earth, these events have been present about the same time ago. Homo habilis, the first appearance of humans and consciousness, was around 2.8 million years ago.

The other point is that this thought experiment doesn´t reflect the dilemma of coexistence of two antagonist states; decaying and not decaying at the same instance. The decay is a tunneling effect where the elemental particles change from their common fluctuation to a different one. Once the decay occurs, it won´t return to the previous state. This decoherent issue is quite different from a coherent state where their multiple solutions continue coexisting. Like the electron in the hydrogen atom that is in outer space with billions of years of coexistence between its proton - electron system. The author´s opinion is that it will be a better thought experiment that involves coherent states. Nonetheless, Schrödinger´s and Einstein´s claims are valid from the philosophical view of the coexistence of antagonist states and their conversion to one state upon an observation or an unobserved conditioning.

3. Nature´s unique presence in 3D space

In classical physics, nature´s presence is mono - deterministic with a unique presence in 3D, i. e., their physical parameters, in an instance, have only one value. This behavior can be traceable from the past to the future and vice versa by the classical equations. The huge difference with Quantum Mechanics (QM) is that this considers the existence of more than one state (from two up to infinite states) and interprets in a deeper way how nature is. This multi - deterministic characteristic of nature, reveals its powerful behavior accomplishing a versatile existence in 3D. A probabilistic weight distribution of each state gives randomness to the core of this multifaceted behavior. Even more, quantum systems can split up in 3D and be maintained as one; a powerful and versatile existence. Linear math, Hilbert´s space and the other mathematical tools assumed in QM manage with wonderful success this reality.

But this powerful behavior presents some challenges to our understanding; so, Schrödinger´s and Einstein´s worries are totally valid. Nature´s presence in 3D is never in a diffuse or multifaceted way. Which model best interprets the superposition of states? Especially with the overwhelming data of one eigenvalue present in 3D. The measurement problem or collapse of the wavefunction is a profound issue.

According to this novel interpretation [2], nature´s presence is intermittent at 3D, revealing randomly one state at an instance. There will never be two or more states in 3D at the same instance. This unique presence of nature in 3D is what the author named “The Certainty principle [3]. ” The intermittent rate presence at 3D is given by Planck´s periodic time which is known since 1900, i. e., the first quantum equation. The presence of energy in 3D as chunks is a consequence of this fleeting presence. The immediate question is what happens in between 3D presences. This proposal states that nature continues in its other longitudinal 4^{th} dimension which is Ctau. An oscillatory presence between 3D and its 4^{th} dimension. It´s unnecessary for theories such as the Many Worlds of Hugh Everett [4]. The Theory of space explains how this multifaceted existence with a singular presence can be. No issue when the probability of a state is an irrational number. Neither is the need to create a huge number of universes just for a tiny local issue circumscribed to a particular quantum system. Besides the more than 10^78 atoms in the known universe and the more than 10^20 Planck´s fluctuations per second at the atomic scale. It´s simpler to think of quantum events as a local issue and the universe composed by the coexistence of 3D and its 4th longitudinal dimension.

Note that the 4^{th} dimension is the Lambda of the total energy, where time Tau is the periodicity of Planck´s great equation (Energy as constant “h” divided by time tau) [5]. A time that is at the core of nature´s presence in 3D. Not Minkowski´s time of event that its application is for evolution phenomena. The usual Ct (the speed of light multiplied by the passage of time) depends on its arbitrary initial time. Additionally, the gravitational spacetime grid doesn´t make too much sense. For example, when two bodies are separated in the axis Ct, what does that mean? Are they separated in space or in longitudinal time? The 4^{th} dimension Ctau or the wavelength Lambda of total energy gives completeness to the other three spatial values. A fast transition from the 4^{th} D to the 3D (small tau) implies that action “h” has a highly energetic presence, and vice versa. Now, 124 years after Planck´s first quantum equation, the presence of energy in chanks has an explaining model. From Lorentz´s gamma factor, any spatial dimension is subject to a relativistic contraction due to its energetic content. So, 3D depends on the information contained in the 4^{th} D. A quaternion of a scalar plus the three other vectors. The spacetime grid will be replaced with a 3D space - energy one; a Cartesian triple axis with a local scale at each point due to the relativistic length contraction.

4. Conclusions

This study is significant as it challenges conventional interpretations of quantum mechanics and offers a novel solution to the observation of a single state, also known as the measurement problem. It contributes to the broader understanding of quantum superposition and offers a simpler alternative to the many - worlds theory and also the independence of awareness or consciousness of other proposals.

Schrodinger´s concern with the superposition of independent states is overcome by the “almost simultaneity” of states present in 3D. The measurement problem vanishes under the premise that only one state is actually present in 3D and any conditioning or observation will just deal with this reality.

In the previous paper [3], the author shows the other goodness of this proposal. The one - at - a - time random presence in 3D explains why there is an arrow on the passage of time. Nature is unable to repeat randomly backward the same states that are randomly forward present at 3D. This one - by - one constant presence makes understandable the statistical law of large numbers. A continuous accumulation of eigenstates presented in 3D gives a tendency to an overall value or its expectation value.

Since this model presents an even stay at 3D as well as at the 4^{th} D, some physical parameters will be distributed in this oscillating scenario. Some parameters at 3D and others at the 4^{th} D in such a way that Planck´s action h is in between them, i. e., a non - commutative multiplication. A multiplication between a parameter at 3D times the other parameter that will immediately be present at the 4^{th} D is quite different from the multiplication of the parameter at the 4^{th} D with the other parameter that has been previously at 3D.

This novel presentation of oscillating existence between its longitudinal dimensions explains why locality at 3D is not the only place of common existence. There is also a locality at the 4^{th} dimension between the elemental particles of a given system. Even if the quantum system is split up in 3D space, these particles are local at the 4^{Th} D. This dual presence overcomes some weirdness of QM in entangled particles, at the double slit experiment, quantum tunneling and many other issues contained in actual interpretations.

Declarations

The author declares no conflicts of interest regarding the publication of this paper.

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