



About the Role of Observers in Quantum Mechanics

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Opinion

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Abstract

In this paper we discuss about the role of observers in our four dimensional universe of the events taking place. Time is the thread which connects the fabric of our world and we believe it to be flowing from a fifth dimension. Observers in quantum mechanics resemble human observers and it seems nature has been built around our existence.

Keywords: Quantum Mechanics; Kronos; Dimensional Universe; Wavefunction

Introduction

In ancient Greek mythology Kronos ate his children, the ancient Gods and gave them back alive. The Greek word for time is chronos which probably is derived from Kronos. The observers are interrelated at some time through interaction and unknown quantities come into surface with time. With energy which is flowing through surfaces as is the experience of every physicist with his occupation with fields time also flows from a fifth dimension as we have discovered [1-8]. As the wavefunction is a wave of light and darkness unrevealed secrets come to light with progression of time. Meanwhile a closed system is experiencing cyclic procedures in which classical time does not proceed.

Main Part

Literature Nobel Lauriates Gerhart Heptmann in his story has written that if one thinks that what happened around him/ her as unique is not true. The same or similar one happening could be happened *SIMULTANEOUSLY* in other part of our Earth or outside the earth but within the universe. This means that between two happenings whether same type or similar type might have a link between them. If these two are within local frame then simply time difference is the distance between the observers who observed. If it is

far away , say one observer is at Kolkata, India and observes a happening (i.e. local frame with coordinates (x_1, y_1, z_1, t_1) and another same or similar happening occurred in USA (i.e. within the earth) or in the space (i.e. outside the earth) whose coordinates are (x_2, y_2, z_2, t_2) then it is not possible to link through local frame of reference. We need a link (which is like a thread) between the coordinates of 1 and 2 and idea of fifth dimension arise in order to link via mathematical transformation of coordinates which are four dimensional x, y, z, t].

The particle is stable at its eigenstates with its particular energies. With proper addition of energy comes instability and due to symmetry breaking the wavefunction collapses. This symmetry breaking means that we assign a beginning for time and time moves forward. This fact is associated with the transformation of mass to magnetic monopoles giving north and south [1]. The breaking of symmetry in space is evident because before we have the wavefunction with its surfaces of constant values and its lobes. They define a symmetry in space. The four dimensional coordinates are the labels which the observer gives to the object under observation. This is so because we live in a five dimensional world and the objects are projections. In this five dimensional world there is a metric which is the analogous of time and it



is flowing through surfaces depending on the path:

$$dY = dm + idV \quad (1)$$

$$dY^2 = dm^2 + dV^2 + idS \quad (2)$$

In Equation (2) S is the action as we have proved in our last paper in this journal [9]. The author believes that like in the field of action space (volume) is transforming into time (mass).

In this mode the many world interpretation of quantum mechanics should not be taken literally [10,11]. Instead many reference frames are produced with which observers witness events through their point of view or else the solid angles [2]. These solid angles are proportional to the four dimensional space time value. They are derived from the limit of the past light cone of the particle. Through their periodicity the quantum values are derived. The volume under observation is a four dimensional hypersurface of eternal present, surface of simultaneity [12]. This timelessness inside a closed quantum system implies that all paths permitted by the boundary conditions may contribute [13-15]. However different observers at different reference frames and simultaneity hyper-surfaces may assign different times at which the collapse of the wave function took place and whether we are in a quantum state of superposition or of an eigen state [16]. This way every observer may have a different past depending on his causal diamond structure [17,18].

With the hat the operator becomes classical from quantum. It covers the hair which are the spacetime paths and its properties [19-23]. It acquires a unique identity as part of the big assembly with distinguishable properties. With the collapse of the wavefunction the reality experienced by the individual particle loses its reality [24].

Conclusions

- The properties of a particle are the space-time paths or histories which it may possess. It resembles the hair in human observers for they grow with time or may change from dark to light. Each observer has his own past.
- We hope we have added some philosophical insight into quantum mechanics.
- We expect continuation of our work so far as in 2025 we celebrate 100 years of quantum theory.

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