

Duality in Quantum Physics

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Abstract: *In this short paper we study duality as it appears in the quantum world after an extensive research on hidden variables. The landmark of this duality is $\Omega = -PV$ which is the last letter of the Greek alphabet, a thermodynamic quantity.*

Keywords: duality, quantum, physics

INTRODUCTION

In a series of published papers, we claim that mass introduces a curvature in spacetime and volume is created. This is an example of how duality appears in quantum mechanics. Mass creates volume. Probability is also connected with entropy. Actually surfaces of constant value of ψ are isentropic surfaces. A most important issue is the collapse of the wavefunction and the creation of discontinuities and because it is connected with wave particle duality we are going to study it. In quantum mechanics the uncertainty comes in when we try to measure two different quantities at the same time.

Main part

The wave particle dualism should be explained on the following basis. The wave does not carry the Energy which is associated with time and therefore describes an eternal simultaneity. It does not carry information which is the effect of energy neither so it can move faster than the speed of light. Once a particle appears it is described in terms of a sequence of events and the appearance of monopole antimonopole pairs and the stopping of the freezing of time. Energy is associated with the particle mass.

The appearance and disappearance of a particle towards its wave form is connected with the yin yang complementarity of light (existence) and darkness(non-existence). This discontinuity in the matter and spacetime is continuity in the five dimensional universe but the fifth dimension is beyond our reach. Between the wave and the particle nature is the quantum of action. Action as we have proved is quantized through the solid angles of the observer.

The name of the great scientist Schrodinger in German is written with umlaut the German vowel which has the Greek equivalent of Omega. Heisenberg on the other hand if pronounced differently reminds Eisberg the German word for iceberg. In Dirac notation the hat upon the operator is the small volume which can be seen on the surface. The Normalization Constant N beneath ψ is the big volume.

One of the very few words that begin with ψ in Greek is psychos which has the same pronunciation with psichi, the soul. It means to blow which in Modern Greek is call phisao which has the same pronunciation with physics. In our modern Greek argon phouskes (bubbles) means stories which are carried verbally and are proved to be of much lesser value than their true ones.

The minus in $\bar{h}$ declares this devaluation of information. Actually $\bar{h}$ (1At) and ψ (pounds per square inch) declare units of pressure and it is exactly Probability P which is equal to relativistic pressure over kinetic energy.

Entanglement is a phenomenon which cannot be studied apart with the Fermi exclusion principle. The same way two fermions cannot exist at the same place with the same properties or quantum numbers which are their labels similarly after an exchange of identity two particles are entangled and measurements on one in one place simultaneously affect measurements of the other.

The yin and the yang was Bohr's emblem and besides complementarity is a symbol of duality. When one's circle closes he goes on to the dark side. This is the end of a measurement when the system is left intact. Spacetime (not time) becomes cyclic again waiting for the thread of destiny in the seize of fate to unfold and follow a straight line.

In Greek the fate is called moira and has the same name with degrees which we measure angles. Solid angles of the observer are involved in quantum mechanics with which the observer witnesses the results.

CONCLUSION

In this rather short paper we tried to focus on the philosophy of quantum mechanics and the game with words. The author has given all the necessary equations and proofs in his 30 papers some of which are found on the reference section. However, we have not exhausted the subject of quantum mechanics indeed and fortunately we would like to announce that a book on quantum mechanics with more details is coming exactly as we celebrate 100 years of quantum mechanics in 2025

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