

**Speaker:**

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**Date & Time :**

29th January 2025 @ 3:00 PM IST

**Title: Historical Developments of Quantum Mechanics**

**Abstract:** The seed of modern quantum theory was sown in 1925 by Heisenberg when he found that position and momentum behave in a different way in micro-world. Schrodinger made life simple by introducing wave equation that could represent the dynamics of the micro system. But the debate started after the formalization of quantum theory and its interpretation that includes uncertainty principle. When Einstein was dreaming for more complete description for micro-world, Von Neumann, in 1932, claimed to have proved that dispersion free description is impossible. Finally, Einstein tried to establish QM to be incomplete in their EPR paper in 1935.

After this development, there had been two investigating areas through which QM developed further. One is along understanding the actual meaning of uncertainty principle as put forward by Heisenberg. Research in this direction gave birth to the concept of generalized measurement namely Positive Operator Valued Measure (POVM). The other is towards finding the possibility of constructing more complete description of physical system that could reproduce quantum predictions. This area finally gave birth to the ideas of quantum non-locality and contextuality in 1964-1967, first put forward by J.S.Bell. Today all these features of QM find applications in some of the quantum information processing tasks. In this talk, I shall try to present an overview of this development along with some recent results.

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