

God's Dice: A Defense of the Copenhagen Interpretation of Quantum Mechanics

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After physicists established the foundations of the quantum mechanical formalism in the 1920's, they turned to interpreting it, that is, deciding what the formalism says about nature. The Copenhagen Interpretation, developed by Niels Bohr, Werner Heisenberg, and Wolfgang Pauli, states that quantum phenomena are indeterministic, that the concepts of classical physics fail in the quantum realm and become complementary, and that particles' entangled state with other particles or with the experimental apparatus is the condition for unambiguous attribution of classical concepts. The Copenhagen Interpretation is the best interpretation of quantum mechanics because it adheres closely to the quantum mechanical formalism, is logically coherent, and withstands thought experimental rebuttals from its opponents, Albert Einstein and Erwin Schrödinger, including Schrödinger's Cat paradox, delayed-choice experiments, and the EPR paradox. Also, assertions that the Copenhagen Interpretation is radically irrational, unrealistic, subjective, and positivistic are faulty and derive from modern distortions of the Copenhagen Interpretation. Finally, the Copenhagen Interpretation (specifically its elements of indeterminism and complementarity) are compatible with Christianity.