

Major Quantum Mechanical Interpretations of mainstream physics

Theories	Real particle/ wave	Brief description of main features
Copenhagen	No	Subatomic particles/waves exist in a smeared out superposition of all possible states until measured/ observed
Many Worlds	No	Each time a measurement is made the superposition of states collapses into all possible states, each in its own dimension, all but one of which are unobservable.
Ensemble or Statistical	Yes	Mathematical probabilities can only be applied to statistically significant ensembles of systems, not to individual systems or particles.
DeBroglie-Bohm Theory	Yes	Particles have definite positions guided by the real wave function, which never collapses
Consistent Histories	No	QM predicts the probability of each alternative history.
Relational	No	Different observers “see” different states which describe not the state but the relationship to the observer
Elementary Cycles	Yes	Particles have recurrences in space-time so that QM is the statistical description of each of these cycles
Transactional	Yes	The standing wave is the result of the past and future waves but does not depend on the observer.
Stochastic Mechanics	Yes	Classical derivation and interpretation of the Schrodinger equations
Objective Collapse	No	Collapse of the wave function occurs randomly and does not involve the observer
Von Neumann/ Wigner	No	Consciousness causes collapse into a fixed state
Many Minds	No	Like many worlds except that it involves consciousness
Quantum Logic	No	A type of logic that tries to reconcile Boolean logic with QM

Quantum Information Theories	No	Variant 1. Ontological: information is existence; Variant 2. Epistemic: QM describes the observer's knowledge, not existence.
Modal	Yes	Based on Schrodinger wave equations but lacks collapse; particles have definite but dynamical states at all instants; measurement only reveals the state at that time.
Time-Symmetric	No	QM modified to include symmetric time so that past and future are equivalent and all operations are reversible in time.
Branching Space-time	No	Like many worlds but splitting of space-time, not just splitting of wave functions.
Popper	Yes	Non-locality defies common sense and the known laws of physics. Determinism and real particles and waves with real values.