Introduction to the Interpretations of Quantum Mechanics
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This four-hour tutorial will present an introduction to the interpretational issues that have plagued quantum mechanics since its birth in the 1920s. These issues were brought into focus by the work of John Bell and others in the second half of the twentieth century, and are now playing a role in the thought of many physicists whose technical work is centered on problems in quantum information processing or quantum cosmology. Our emphasis will be on major interpretational programs that are the subject of active research and development today, and we will try to present and compare these without advocating a particular viewpoint. The material will all be at the introductory level; the level of technical quantum mechanics required is basic familiarity with "bra - ket" notation. While some recent papers will be mentioned, the goal of the tutorial will be pedagogical; we will attempt to provide attendees with a background and context for current interpretational literature. An outline of the tutorial follows:

Introduction
"Philosophy 101"
Operational quantum mechanics
Realist talk
Hidden variable theories I: von Neumann's "proof"
Hidden variable theories II: Contextuality
Orthodoxy
The decoherence strategy
Copenhagen quantum mechanics
Addendum: Bell's inequalities
Bohm-deBroglie quantum mechanics
Relative state interpretations
Modal interpretations
Consistent histories quantum mechanics
Collapse theories
Wrap-up