PHYSICS COLLOQUIUM

$$|\Psi\rangle = \frac{|\ \text{  }\ \rangle + |\ \text{  }\ \rangle}{\sqrt{2}}$$

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The Fate of Quantum Superposition

Abstract

In the research life of most physicists, we are rarely required to directly confront fundamental questions in quantum mechanics such as those that arise from the Schrödinger's Cat paradox. We theorists generally focus on formal theory and calculations that follow well-known principles of quantum theory. Occasionally, the puzzling outcome of an experiment and the theory that reveals the interpretation of those experimental results forces us to reexamine these fundamental questions.

This is a story of one of these occasions. Experiments on X-ray photoionization of small molecules conducted at the Advanced Light source, at the Lawrence Berkeley National Laboratory, together with the theory conducted in collaboration with the Atomic, Molecular and Optical scientists forced us to revisit the question of quantum superposition and the nature of physical reality.

3:00-4:30 p.m., Friday, October 27th in McLane 162