Schlosshauer

Decoherence

and the Quantum-To-Classical Transition

This detailed, yet accessible introduction to the exciting field of quantum decoherence guides the reader through the basics and then explains the essential consequences of the phenomenon for our understanding of the world. Among other things, the book examines how the classical world of our experience can emerge from quantum mechanics, and reviews the implications of decoherence for the various interpretations of quantum mechanics. The author also reviews recent experiments confirming the puzzling consequences of the quantum superposition principle ("Schrödinger kittens") and making decoherence processes directly observable. The book includes an introduction to quantum computing and the role of decoherence and a discussion of quantum mechanics and the brain.

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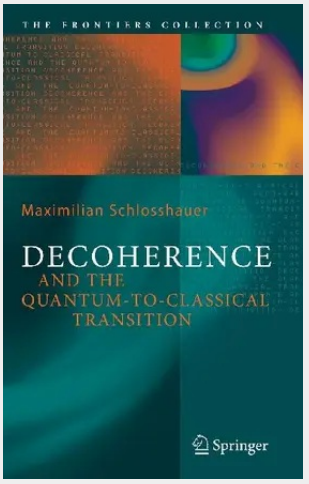

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