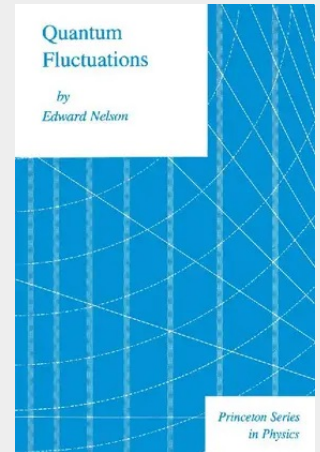


Quantum Fluctuations

Stochastic mechanics is a description of quantum phenomena in classical probabilistic terms. This work contains a detailed account of the kinematics of diffusion processes, including diffusions on curved manifolds which are necessary for the treatment of spin in stochastic mechanics. The dynamical equations of the theory are derived from a variational principle, and interference, the asymptotics of free motion, bound states, statistics, and spin are described in classical terms. In addition to developing the formal mathematical aspects of the theory, the book contains discussion of possible physical causes of quantum fluctuations in terms of an interaction with a background field. The author gives a critical analysis of stochastic mechanics as a candidate for a realistic theory of physical processes, discussing measurement, local causality in the sense of Bell, and the failure of the theory in its present form to satisfy locality.

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