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   Autore   Blanchard Ph

   Titolo   Mathematical and Physical Aspects of Stochastic Mechanics [[electronic resource] /] / by Ph. Blanchard, Ph. Combe, W. Zheng

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   Nota di contenuto   Kinematics of stochastic diffusion processes -- Nelson stochastic dynamics — Newtonian processes -- Global existence for diffusions with singular drifts -- Stochastic variational principles -- Two viewpoints concerning quantum and stochastic mechanics -- A non-quantal look at stochastic mechanics.

   Sommario/riassunto   This lecture is meant as an introduction to stochastic mechanics for graduate students. The concepts and most of the statements are formulated in precise and exact mathematical language. Nevertheless, the emphasis is on the physical concepts. The authors discuss thoroughly the aspects of stochastic mechanics in quantum mechanics, firstly as a way of quantization as proposed by E. Nelson and secondly, as a tool to give a more detailed description of microphysics within the framework of the standard form of quantum theory. Another part of their work treats stochastic mechanics as a general description of a class of dynamical systems disturbed by some isotropic translation invariant noise thus extending Nelson's theory within the framework of classical physics. The necessary tools like stochastic processes, in particular those used in mathematical physics, existence and construction of diffusion processes as well as stochastic variational principles are presented in detail. Here is certainly an excellent text on this important field of mathematical physics.