Ikeda, Nobuyuki; Watanabe, Shinzo

Stochastic differential equations and diffusion processes. 2nd ed. (English) Zbl 0684.60040

North-Holland Mathematical Library, 24. Amsterdam etc.: North-Holland; Tokyo: Kodansha Ltd. xvi, 555 p. $ 147.25; Dfl. 280.00 (1989).

The first edition of the book has been extensively reviewed in Zbl 0495.60005. In the mean time it became a world wide known standard reference text from which also a Russian translation appeared (see Zbl 0607.60041). Besides many smaller corrections two chapters are completely new written and a lot of achievements obtained in the mean time are incorporated. The headlines of the new chapters III and V are:

The space of stochastic differentials; Stochastic differential equations with respect to quasimartingales; Moment inequalities for martingales; Some applications of stochastic calculus to Brownian motions; Exponential martingales; Conformal martingales.

Stochastic differential equations on manifolds; Flow of diffeomorphisms; Heat equation on a manifold and horizontal lifts; Non-degenerate diffusions on a manifold and their horizontal lifts; Stochastic parallel displacement and heat equation for tensor fields; The case with boundary conditions; Kähler diffusions; Malliavin's stochastic calculus of variation for Wiener functionals; Pull-back of Schwartz distributions under Wiener mappings and the regularity of induced measures (probability laws); The case of stochastic differential equations: Applications to heat kernels.

Reviewer: M.Breger

MSC:

60Hxx	Stochastic analysis
60J60	Diffusion processes
60-02	Research exposition (monographs, survey articles) pertaining to probability theory
58J65	Diffusion processes and stochastic analysis on manifolds

Keywords:

Stochastic differential equations; Moment inequalities; Exponential martingales; Conformal martingales; Flow of diffeomorphisms; Stochastic parallel displacement; Malliavin's stochastic calculus of variation