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Continuous martingales and Brownian motion. 2nd ed. (English) Zbl 0804.60001

Grundlehren der Mathematischen Wissenschaften. 293. Berlin: Springer-Verlag. xi, 560 p. DM 168.00; öS 1.310.40; sFr 168.00/hbk (1994).

The monograph is an updated and slightly expanded version of the first edition of 1991 (Zbl 0731.60002). A new "catalogue" at the end helps the reader to identify the location of various results which are hard to find via the index. Both the bibliography and the index have been updated and enlarged. The sequence and titles of the chapters and paragraphs remain unchanged but some new results (e.g. applications of excursion theory to laws of Brownian bridge, relations between exponentials of Brownian motion and Bessel processes) have been added.

The second edition retains the character of the first one: it provides a magnificent guide to many beautiful, exciting and deep results related to Brownian motion or continuous semimartingales. Due to the impressive number of exercises (with hints) the range of material covered is even larger than the size of 560 pages suggests. Even though the book is basically self-contained, readers without any prior knowledge in stochastic processes may find it hard to follow and to manage the exercises.

Reviewer: M.Scheutzow (Berlin)

MSC:

60-02 Research exposition (monographs, survey articles) pertaining to probability theory

60G44 Martingales with continuous parameter

60J65 Brownian motion

Keywords:

Ray-Knight theorem; reference works; probabilistic theory of Brownian motion; stochastic calculus; excursion theory; applications of excursion theory to laws of Brownian bridge; Bessel processes