1. Record Nr. UNINA9910810359903321

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Titolo	Lectures on white noise functionals / / T. Hida, Si Si
Pubbl/distr/stampa	Hackensack, NJ, : World Scientific, c2008
ISBN	981-281-204-0
Edizione	[1st ed.]
Descrizione fisica	1 online resource (280 p.)
Altri autori (Persone)	SiSi
Disciplina	519.2/2
Soggetti	White noise theory Gaussian processes
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references (p. 253-261) and index.
Nota di contenuto	Preface; Contents; 1. Introduction; 1.1 Preliminaries; 1.2 Our idea of establishing white noise analysis; 1.3 A brief synopsis of the book; 1.4 Some general background; 1.4.1 Characteristics of white noise analysis; 2. Generalized white noise functionals; 2.1 Brownian motion and Poisson process; elemental stochastic processes; 2.2 Comparison between Brownian motion and Poisson process; 2.3 The Bochner-Minlos theorem; 2.4 Observation of white noise through the L evy's construction of Brownian motion; 2.5 Spaces (L2), F and F arising from white noise; 2.6 Generalized white noise functionals A. Use of the Sobolev space structureB. An analogue of the Schwartz space.; 2.7 Creation and annihilation operators; 2.8 Examples; 2.9 Addenda; A.1. The Gauss transform, the S-transform and applications; A.2. The Karhunen-Lo eve expansion; A.3. Reproducing kernel Hilbert space; 3. Elemental random variables and Gaussian processes; 3.1 Elemental noises; I. The first method of stochastic integral.; II. The second method of stochastic integral.; 3.2 Canonical representation of a Gaussian process; 3.3 Multiple Markov Gaussian processes; 3.4 Fractional Brownian motion 3.5 Stationarity of fractional Brownian motion3.6 Fractional order differential operator in connection with L evy's Brownian motion; 3.7 Gaussian random fields; 4. Linear processes and linear fields; 4.1 Gaussian systems; 4.2 Poisson systems; 4.3 Linear functionals of Poisson noise; 4.4 Linear processes; 4.5 L evy field and generalized L evy field; 4.6 Gaussian elemental noises; 5. Harmonic analysis arising

Sommario/riassunto

White noise analysis is an advanced stochastic calculus that has developed extensively since three decades ago. It has two main characteristics. One is the notion of generalized white noise functionals, the introduction of which is oriented by the line of advanced analysis, and they have made much contribution to the fields in science enormously. The other characteristic is that the white noise analysis has an aspect of infinite dimensional harmonic analysis arising from the infinite dimensional rotation group. With the help of this rotation group, the white noise analysis has explored new are