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Autore	Wio Horacio S
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6.6 A Family of Analytical Solutions6.7 Stochastic Resonance in a Monostable Non-Harmonic Time-Dependent Potential; 7. Non-Markov Processes: Colored Noise Case; 7.1 Introduction; 7.2 Ornstein-Uhlenbeck Case; 7.3 The Stationary Distribution; 7.4 The Interpolating Scheme; 7.4.1 Stationary Distributions; 8. Non-Markov Processes: Non-Gaussian Case; 8.1 Introduction; 8.2 Non-Gaussian Process ; 8.3 Effective Markov Approximation; 9. Non-Markov Processes: Nonlinear Cases; 9.1 Introduction; 9.2 Nonlinear Noise; 9.2.1 Polynomial Noise; 9.2.2 Exponential Noise; 9.3 Kramers Problem
10. Fractional Diffusion Process10.1 Short Introduction to Fractional Brownian Motion; 10.2 Fractional Brownian Motion: A Path Integral Approach; 10.3 Fractional Brownian Motion: The Kinetic Equation; 10.4 Fractional Brownian Motion: Some Extensions; 10.4.1 Case 1; 10.4.2 Case 2; 10.5 Fractional Levy Motion: Path Integral Approach; 10.5.1 Gaussian Test; 10.5.2 Kinetic Equation; 10.6 Fractional Levy Motion: Final Comments; 11. Feynman-Kac Formula, the Influence Functional; 11.1 Feynman-Kac formula; 11.2 Influence Functional: Elimination of Irrelevant Variables; 11.2.1 Example: Colored Noise

Sommario/riassunto

This book provides an introductory albeit solid presentation of path integration techniques as applied to the field of stochastic processes. The subject began with the work of Wiener during the 1920's, corresponding to a sum over random trajectories, anticipating by two decades Feynman's famous work on the path integral representation of quantum mechanics. However, the true trigger for the application of these techniques within nonequilibrium statistical mechanics and stochastic processes was the work of Onsager and Machlup in the early 1950's. The last quarter of the 20th century has witnesse