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Nota di contenuto	Chapter 1. Introduction to Chemical transformations in far from equilibrium systems -- Chapter 2. A brief introduction to vectors spaces: succinct but pertinent summary for scientists -- Chapter 3. White noise probability spaces (Hermite polynomials and functions and their use in defining Weiner Chaos expansion) -- Chapter 4. Introduction to Skorohod integration and Malliavian derivatives—practical interpretations -- Chapter 5. Introduction to Wick Product and its algebra (analytical solutions to Wick product driven stochastic differential equations; Hermite transformations) -- Chapter 6. Numerical solutions to stochastic chemical reactions -- Chapter 7. Stochastic coupled reactions systems: Numerical solutions -- Chapter 8. Modelling chiral symmetry breaking and stability in a noisy

environment using Wick products—A case study.

Sommario/riassunto

This book highlights the applications of stochastic differential equations in white noise probability space to chemical reactions that occur in biology. These reactions operate in fluctuating environments and are often coupled with each other. The theory of stochastic differential equations based on white noise analysis provides a physically meaningful modelling framework. The Wick product-based calculus for stochastic variables is similar to regular calculus; therefore, there is no need for Ito calculus. Numerical examples are provided with novel ways to solve the equations. While the theory of white noise analysis is well developed by mathematicians over the past decades, applications in biophysics do not exist. This book provides a bridge between this kind of mathematics and biophysics.