

springer.com

Peter Schuster

Springer Series in Synergetics

Stochasticity in Processes

Fundamentals and Applications to Chemistry and Biology

Deringer

Springer COMPLEXITY

1st ed. 2016, XVI, 718 p. 168 illus., 162 illus. in color.



Hardcover

- ▶ 162,99 € | £121.50 | \$189.00
- *174,40 € (D) | 179,29 € (A) | CHF 179.00

🥑 eBook

Available from your library or

springer.com/shop



Printed eBook for just

- ▶ €|\$24.99
- springer.com/mycopy

P. Schuster Stochasticity in Processes

Fundamentals and Applications to Chemistry and Biology

Series: Springer Series in Synergetics

- > Authored by a leading scientist in the field
- Course-based, self-contained introduction to the subject matter
- Modular presentation, contains case studies and detailed derivation of results

This book has developed over the past fifteen years from a modern course on stochastic chemical kinetics for graduate students in physics, chemistry and biology. The first part presents a systematic collection of the mathematical background material needed to understand probability, statistics, and stochastic processes as a prerequisite for the increasingly challenging practical applications in chemistry and the life sciences examined in the second part.

Recent advances in the development of new techniques and in the resolution of conventional experiments at nano-scales have been tremendous: today molecular spectroscopy can provide insights into processes down to scales at which current theories at the interface of physics, chemistry and the life sciences cannot be successful without a firm grasp of randomness and its sources. Routinely measured data is now sufficiently accurate to allow the direct recording of fluctuations. As a result, the sampling of data and the modeling of relevant processes are doomed to produce artifacts in interpretation unless the observer has a solid background in the mathematics of limited reproducibility.

The material covered is presented in a modular approach, allowing more advanced sections to be skipped if the reader is primarily interested in applications. At the same time, most derivations of analytical solutions for the selected examples are provided in full length to guide more advanced readers in their attempts to derive solutions on their own. The book employs uniform notation throughout, and a glossary has been added to define the most important notions discussed.



Order online at springer.com ► or for the Americas call (toll free) 1-800-SPRINGER ► or email us at: customerservice@springer.com. ► For outside the Americas call +49 (0) 6221-345-4301 ► or email us at: customerservice@springer.com.

The first \in price and the £ and \$ price are net prices, subject to local VAT. Prices indicated with * include VAT for books; the \in (D) includes 7% for Germany, the \in (A) includes 10% for Austria. Prices indicated with ** include VAT for electronic products; 19% for Germany, 20% for Austria. All prices exclusive of carriage charges. Prices and other details are subject to change without notice. All errors and omissions excepted.