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Sinopsis

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Since the first edition of Stochastic Modelling for Systems Biology, there have been many interesting developments in the use of "likelihood-free" methods of Bayesian inference for complex stochastic models. Re-written to reflect this modern perspective, this second edition covers everything necessary for a good appreciation of stochastic kinetic modelling of biological networks in the systems biology context.

Keeping with the spirit of the first edition, all of the new theory is presented in a very informal and intuitive manner, keeping the text as accessible as possible to the widest possible readership.

New in the Second Edition

All examples have been updated to Systems Biology Markup Language Level 3
All code relating to simulation, analysis, and inference for stochastic kinetic models has been re-written and re-structured in a more modular way
An ancillary website provides links, resources, errata, and up-to-date information on installation and use of the associated R package
More background material on the theory of Markov processes and stochastic differential equations, providing more substance for mathematically inclined readers
Discussion of some of the more advanced concepts relating to stochastic kinetic models, such as random time change representations, Kolmogorov equations, Fokker-Planck equations and the linear noise approximation
Simple modelling of "extrinsic" and "intrinsic" noise

An effective introduction to the area of stochastic modelling in computational systems biology, this new edition adds additional mathematical detail and computational methods that will provide a stronger foundation for the development of more advanced courses in stochastic biological modelling.