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Titolo	Classical and Spatial Stochastic Processes : With Applications to Biology // by Rinaldo B. Schinazi
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Descrizione fisica	1 online resource (XII, 268 p. 334 illus., 206 illus. in color.) : online resource
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Soggetti	Probabilities Biomathematics Applied mathematics Engineering mathematics Probability Theory and Stochastic Processes Genetics and Population Dynamics Physiological, Cellular and Medical Topics Mathematical and Computational Engineering Applications of Mathematics
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Nota di contenuto	Discrete-Time Markov Chains -- Stationary Distributions of a Markov Chain -- Continuous-Time Birth and Death Markov Chains -- Percolation -- A Cellular Automaton -- Continuous-Time Branching Random Walk -- The Contact Process on a Homogeneous Tree -- Appendix: Some Facts About Probabilities on Countable Spaces -- Applications to Population Biology.- References.
Sommario/riassunto	The revised and expanded edition of this textbook presents the concepts and applications of random processes with the same illuminating simplicity as its first edition, but with the notable addition of substantial modern material on biological modeling. While still treating many important problems in fields such as engineering and mathematical physics, the book also focuses on the highly relevant topics of cancerous mutations, influenza evolution, drug resistance, and immune response. The models used elegantly apply various

classical stochastic models presented earlier in the text, and exercises are included throughout to reinforce essential concepts. The second edition of *Classical and Spatial Stochastic Processes* is suitable as a textbook for courses in stochastic processes at the advanced-undergraduate and graduate levels, or as a self-study resource for researchers and practitioners in mathematics, engineering, physics, and mathematical biology. Reviews of the first edition: An appetizing textbook for a first course in stochastic processes. It guides the reader in a very clever manner from classical ideas to some of the most interesting modern results. ... All essential facts are presented with clear proofs, illustrated by beautiful examples. ... The book is well organized, has informative chapter summaries, and presents interesting exercises. The clear proofs are concentrated at the ends of the chapters making it easy to find the results. The style is a good balance of mathematical rigorosity and user-friendly explanation. — *Biometric Journal* This small book is well-written and well-organized. ... Only simple results are treated ... but at the same time many ideas needed for more complicated cases are hidden and in fact very close. The second part is a really elementary introduction to the area of spatial processes. ... All sections are easily readable and it is rather tentative for the reviewer to learn them more deeply by organizing a course based on this book. The reader can be really surprised seeing how simple the lectures on these complicated topics can be. At the same time such important questions as phase transitions and their properties for some models and the estimates for certain critical values are discussed rigorously. ... This is indeed a first course on stochastic processes and also a masterful introduction to some modern chapters of the theory. —*Zentralblatt Math* .
