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Nota di contenuto	I. Introduction to the theory of reaction-diffusion equations -- Chapter 1. Reaction-diffusion processes, models and applications -- Chapter 2. Methods of analysis -- Chapter 3. Reaction-diffusion problems in bounded domains.- Chapter 4. Reaction-diffusion problems on the whole axis -- II. Reaction-diffusion waves in cylinders -- Chapter 5. Monotone systems -- Chapter 6. Reaction-diffusion problems with convection -- Chapter 7. Reaction-diffusion systems with different diffusion coefficients -- Chapter 8. Nonlinear boundary conditions -- Chapter 9. Nonlocal reaction-diffusion equations -- Chapter 10. Multi-scale models in biology -- Bibliographical comments -- Concluding remarks -- Acknowledgements -- References -- Index.
Sommario/riassunto	If we had to formulate in one sentence what this book is about it might be "How partial differential equations can help to understand heat explosion, tumor growth or evolution of biological species". These and many other applications are described by reaction-diffusion equations. The theory of reaction-diffusion equations appeared in the first half of the last century. In the present time, it is widely used in population dynamics, chemical physics, biomedical modelling. The purpose of this book is to present the mathematical theory of reaction-diffusion equations in the context of their numerous applications. We will go from the general mathematical theory to specific equations and then to their applications. Mathematical analysis of reaction-diffusion

equations will be based on the theory of Fredholm operators presented in the first volume. Existence, stability and bifurcations of solutions will be studied for bounded domains and in the case of travelling waves. The classical theory of reaction-diffusion equations and new topics such as nonlocal equations and multi-scale models in biology will be considered.
