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Soggetti	Mathematical physics Energy dissipation Biophysics Attractors (Mathematics) Chaotic behavior in systems
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Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Frontmatter -- Preface -- Contents -- 1. Introduction -- 2. Complex dynamics in neural and genetic networks -- 3. Complex patterns and attractors for reaction-diffusion systems -- 4. Random perturbations, evolution and complexity -- Bibliography -- Index -- Backmatter
Sommario/riassunto	This book focuses on the dynamic complexity of neural, genetic networks, and reaction diffusion systems. The author shows that all robust attractors can be realized in dynamics of such systems. In particular, a positive solution of the Ruelle-Takens hypothesis for on chaos existence for large class of reaction-diffusion systems is given. The book considers viability problems for such systems - viability under extreme random perturbations - and discusses an interesting hypothesis of M. Gromov and A. Carbone on biological evolution. There appears a connection with the Kolmogorov complexity theory. As applications, transcription-factors-microRNA networks are considered, patterning in biology, a new approach to estimate the computational power of neural and genetic networks, social and economical networks, and a connection with the hard combinatorial problems.

