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10.3 Automata on proximity graphsChapter 11 Coupled layers; 11.1 Coupled cellular automata; 11.2 Coupled Boolean networks; Chapter 12 Continuous state variable; 12.1 Continuous-valued automata; 12.2 Finite difference equations; 12.2.1 One-dimensional maps; 12.2.2 Two-dimensional maps; 12.3 Plane curves; 12.4 Stochastic processes; Chapter 13 Spatial games; 13.1 The prisoner's dilemma; 13.2 Degrees of cooperation and strategies; 13.3 The structurally dynamic PD (SDPD); 13.4 Pavlov versus anti-Pavlov (PAP) in the PD; 13.5 Other spatial games; Appendix A Average memory starting at random
Appendix B Dynamic with short-term memoryAppendix C Heterogeneous and coupled networks; Appendix D Continuous state variable; Appendix E Spatial games; Bibliography; List of Figures; List of Tables; Index

Sommario/riassunto

Memory is a universal function of organized matter. What is the mathematics of memory? How does memory affect the space-time behaviour of spatially extended systems? Does memory increase complexity? This book provides answers to these questions. It focuses on the study of spatially extended systems, i.e., cellular automata and other related discrete complex systems. Thus, arrays of locally connected finite state machines, or cells, update their states simultaneously, in discrete time, by the same transition rule. The classical dynamics in these systems is Markovian: only the actual configurati