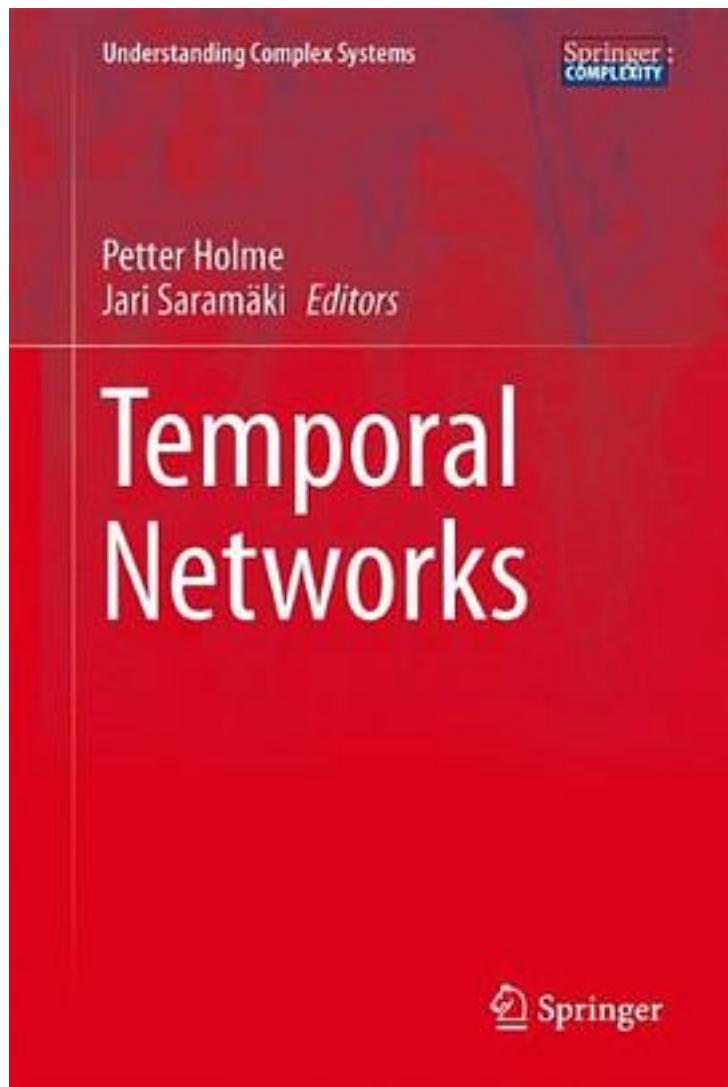


Temporal Networks



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The concept of temporal networks is an extension of complex networks as a modeling framework to include information on when interactions between nodes happen. Many studies of the last decade examine how the static network structure affect dynamic systems on the network. In this traditional approach the temporal aspects are pre-encoded in the dynamic system model. Temporal-network methods, on the other hand, lift the temporal information from the level of system dynamics to the mathematical representation of the contact network itself. This framework becomes particularly useful for cases where there is a lot of structure and heterogeneity both in the timings of interaction events and the network topology. The advantage compared to common static network approaches is the ability to design more accurate models in order to explain and predict large-scale dynamic phenomena (such as, e.g., epidemic outbreaks and other spreading phenomena). On the other hand, temporal network methods are mathematically and conceptually more challenging. This book is intended as a first introduction and state-of-the art overview of this rapidly emerging field.

作者介绍:

目录: Front Matter....Pages i-viii

Temporal Networks as a Modeling Framework....Pages 1-14

Graph Metrics for Temporal Networks....Pages 15-40

Burstiness: Measures, Models, and Dynamic Consequences....Pages 41-64

Temporal Scale of Dynamic Networks....Pages 65-94

Models, Entropy and Information of Temporal Social Networks....Pages 95-117

Temporal Motifs....Pages 119-133

Applications of Temporal Graph Metrics to Real-World Networks....Pages 135-159

Spreading Dynamics Following Bursty Activity Patterns....Pages 161-174

Time Allocation in Social Networks: Correlation Between Social Structure and Human Communication Dynamics....Pages 175-190

Temporal Networks of Face-to-Face Human Interactions....Pages 191-216

Social Insects: A Model System for Network Dynamics....Pages 217-244

Self-Exciting Point Process Modeling of Conversation Event Sequences....Pages 245-264

Inferring and Calibrating Triadic Closure in a Dynamic Network....Pages 265-282

Dynamic Communicability Predicts Infectiousness....Pages 283-294

Random Walks on Stochastic Temporal Networks....Pages 295-313

A Temporal Network Version of Watts' s Cascade Model....Pages 315-329

Timing Interactions in Social Simulations: The Voter Model....Pages 331-352

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