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Nota di contenuto	Cover; Title Page; Copyright; Contents; Preface; Summary; Chapter 1 Introduction; 1.1 Motivation and background; 1.2 A brief history of mathematical epidemiology; 1.2.1 Compartmental modeling; 1.2.2 Epidemic modeling on complex networks; 1.3 Organization of the book; References; Chapter 2 Various epidemic models on complex networks; 2.1 Multiple stage models; 2.1.1 Multiple susceptible individuals; 2.1.2 Multiple infected individuals; 2.1.3 Multiple-staged infected individuals; 2.2 Staged progression models; 2.2.1 Simple-staged progression model 2.2.2 Staged progression model on homogenous networks 2.2.3 Staged progression model on heterogenous networks; 2.2.4 Staged progression model with birth and death; 2.2.5 Staged progression model with birth and death on homogenous networks; 2.2.6 Staged progression model with birth and death on heterogenous networks; 2.3 Stochastic SIS model; 2.3.1 A general concept: Epidemic spreading efficiency; 2.4 Models with population mobility; 2.4.1 Epidemic spreading without mobility of individuals; 2.4.2 Spreading of epidemic diseases among different cities

2.4.3 Epidemic spreading within and between cities
2.5 Models in meta-populations; 2.5.1 Model formulation; 2.6 Models with effective contacts; 2.6.1 Epidemics with effectively uniform contact; 2.6.2 Epidemics with effective contact in homogenous and heterogenous networks; 2.7 Models with two distinct routes; 2.8 Models with competing strains; 2.8.1 SIS model with competing strains; 2.8.2 Remarks and discussions; 2.9 Models with competing strains and saturated infectivity; 2.9.1 SIS model with mutation mechanism; 2.9.2 SIS model with super-infection mechanism
2.10 Models with birth and death of nodes and links
2.11 Models on weighted networks; 2.11.1 Model with birth and death and adaptive weights; 2.12 Models on directed networks; 2.13 Models on colored networks; 2.13.1 SIS epidemic models on colored networks; 2.13.2 Microscopic Markov-chain analysis; 2.14 Discrete epidemic models; 2.14.1 Discrete SIS model with nonlinear contagion scheme; 2.14.2 Discrete-time epidemic model in heterogenous networks; 2.14.3 A generalized model; References; Chapter 3 Epidemic threshold analysis; 3.1 Threshold analysis by the direct method
3.3.4 Threshold analysis for SIS model with super-infection

Sommario/riassunto

Explores the emerging subject of epidemic dynamics on complex networks, including theories, methods, and real-world applications. Throughout history epidemic diseases have presented a serious threat to human life, and in recent years the spread of infectious diseases such as dengue, malaria, HIV, and SARS has captured global attention; and in the modern technological age, the proliferation of virus attacks on the Internet highlights the emergent need for knowledge about modeling, analysis, and control in epidemic dynamics on complex networks. For advancement of techniques
