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Collana	Nonlinear Systems and Complexity, , 2195-9994 ; ; 19
Disciplina	003.3
Soggetti	Mathematical models Infectious diseases Computational complexity Statistical physics Epidemiology Mathematical Modeling and Industrial Mathematics Infectious Diseases Complexity Applications of Nonlinear Dynamics and Chaos Theory
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di bibliografia	Includes bibliographical references.
Nota di contenuto	Introduction -- Modelling the Spread of an Infectious Disease -- Hybrid Epidemic Models -- Control Strategies for Eradication -- Discussions and Conclusions -- References -- Appendix.
Sommario/riassunto	This volume presents infectious diseases modeled mathematically, taking seasonality and changes in population behavior into account, using a switched and hybrid systems framework. The scope of coverage includes background on mathematical epidemiology, including classical formulations and results; a motivation for seasonal effects and changes in population behavior, an investigation into term-time forced epidemic models with switching parameters, and a detailed account of several different control strategies. The main goal is to study these models theoretically and to establish conditions under which eradication or persistence of the disease is guaranteed. In doing so, the long-term behavior of the models is determined through mathematical techniques

from switched systems theory. Numerical simulations are also given to augment and illustrate the theoretical results and to help study the efficacy of the control schemes.

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