1. Record Nr. UNINA9910784875603321

Autore	Mosekilde Erik
Titolo	Chaotic synchronization [[electronic resource]] : applications to living systems / / Erik Mosekilde, Yuri Maistrenko, Dmitry Postnov
Pubbl/distr/stampa	River Edge, NJ, : World Scientific, c2002
ISBN	981-277-826-8
Descrizione fisica	1 online resource (440 p.)
Collana	World Scientific series on nonlinear science. Series A ; ; v. 42
Altri autori (Persone)	MaistrenkoIU. L (IUrii Leonidovich) PostnovDmitry
Disciplina	003/.857
Soggetti	Chaotic behavior in systems Synchronization
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographies and index.
Nota di contenuto	Contents ; PREFACE ; 1 COUPLED NONLINEAR OSCILLATORS ; 1.1 The Role of Synchronization ; 1.2 Synchronization Measures ; 1.3 Mode-Locking of Endogenous Economic Cycles ; 2 TRANSVERSE STABILITY OF COUPLED MAPS ; 2.1 Riddling Bubbling and On-Off Intermittency 2.2 Weak Stability of the Synchronized Chaotic State 2.3 Formation of Riddled Basins of Attraction ; 2.4 Destabilization of Low-Periodic Orbits ; 2.5 Different Riddling Scenarios ; 2.6 Intermingled Basins of Attraction ; 2.7 Partial Synchronization for Three Coupled Maps 3 UNFOLDING THE RIDDLING BIFURCATION 3.1 Locally and Globally Riddled Basins of Attraction ; 3.2 Conditions for Soft and Hard Riddling ; 3.3 Example of a Soft Riddling Bifurcation ; 3.4 Example of a Hard Riddling Bifurcation ; 3.5 Destabilization Scenario for a = a1 3.6 Coupled Intermittency-III Maps 3.7 The Contact Bifurcation ; 3.8 Conclusions ; 4 TIME-CONTINUOUS SYSTEMS ; 4.1 Two Coupled Rossler Oscillators ; 4.2 Transverse

Destabilization of Low-Periodic Orbits
; 4.3 Riddled Basins ; 4.4 Bifurcation Scenarios for Asynchronous Cycles
4.5 The Role of a Small Parameter Mismatch
4.6 Influence of Asymmetries in the Coupled System
; 4.7 Transverse Stability of the Equilibrium Point
; 4.8 Partial Synchronization of Coupled Oscillators
; 4.9 Clustering in a System of Four Coupled Oscillators
4.10 Arrays of Coupled Rossler Oscillators

Sommario/riassunto

Interacting chaotic oscillators are of interest in many areas of physics, biology, and engineering. In the biological sciences, for instance, one of the challenging problems is to understand how a group of cells or functional units, each displaying complicated nonlinear dynamic phenomena, can interact with one another to produce a coherent response on a higher organizational level. This book is a guide to the fascinating new concept of chaotic synchronization. The topics covered range from transverse stability and riddled basins of attraction in a system of two coupled logistic maps over par