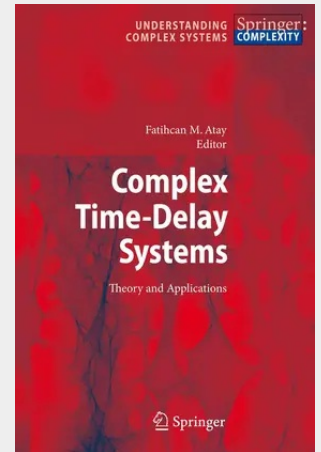


Complex Time-Delay Systems

Theory and Applications

One of the major contemporary challenges in both physical and social sciences is modeling, analyzing, and understanding the self-organization, evolution, behavior, and eventual decay of complex dynamical systems ranging from cell assemblies to the human brain to animal societies. The multi-faceted problems in this domain require a wide range of methods from various scientific disciplines. There is no question that the inclusion of time delays in complex system models considerably enriches the challenges presented by the problems. Although this inclusion often becomes inevitable as real-world applications demand more and more realistic models, the role of time delays in the context of complex systems so far has not attracted the interest it deserves. The present volume is an attempt toward filling this gap. There exist various useful tools for the study of complex time-delay systems. At the forefront is the mathematical theory of delay equations, a relatively mature field in many aspects, which provides some powerful techniques for analytical inquiries, along with some other tools from statistical physics, graph theory, computer science, dynamical systems theory, probability theory, simulation and optimization software, and so on. Nevertheless, the use of these methods requires a certain synergy to address complex systems problems, especially in the presence of time delays.

One of the major contemporary challenges in both physical and social sciences is modeling, analyzing, and understanding the self-organization, evolution, behavior, and eventual decay of complex dynamical systems ranging from cell assemblies to the human brain to animal societies. The multi-faceted problems in this domain require a wide range of methods from various scientific disciplines. There is no question that the inclusion of time delays in complex system models considerably enriches the challenges presented by the problems. Although this inclusion often becomes inevitable as real-world applications demand more and more realistic models, the role of time delays in the context of complex systems so far has not attracted the interest it deserves. The present volume is an attempt toward filling this gap. There exist various useful tools for the study of complex time-delay systems. At the forefront is the mathematical theory of delay equations, a relatively mature field in many aspects, which provides some powerful techniques for analytical inquiries, along with some other tools from statistical physics, graph theory, computer science, dynamical systems theory, probability theory, simulation and optimization software, and so on. Nevertheless, the use of these methods requires a certain synergy to address complex systems problems, especially in the presence of time delays.



53,49 €

49,99 € (zzgl. MwSt.)

Lieferfrist: bis zu 10 Tage

Artikelnummer: 9783642262913

Medium: Buch

ISBN: 978-3-642-26291-3

Verlag: Springer

Erscheinungstermin: 04.05.2012

Sprache(n): Englisch

Auflage: 2010

Serie: Understanding Complex Systems

Produktform: Kartoniert

Gewicht: 517 g

Seiten: 328

Format (B x H): 155 x 235 mm

