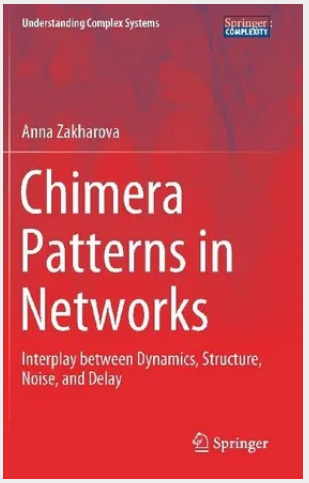
Zakharova

Chimera Patterns in Networks

Interplay between Dynamics, Structure, Noise, and Delay



This is the first book devoted to chimera states - peculiar partial synchronization patterns in networks. Providing an overview of the state of the art in research on this topic, it explores how these hybrid states, which are composed of spatially separated domains of synchronized and desynchronized behavior, arise surprisingly in networks of identical units and symmetric coupling topologies. The book not only describes various types of chimeras, but also discusses the role of time delay, stochasticity, and network topology for these synchronization-desynchronization patterns. Moreover, it addresses the question of robustness and control of chimera states, which have various applications in physics, biology, chemistry, and engineering.

This book is intended for researchers with a background in physics, applied mathematics, or engineering. Of great interest to specialists working on related problems, it is also a valuable resource for newcomers to the field and other scientistsworking on the control of spatio-temporal patterns.

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