



entropy

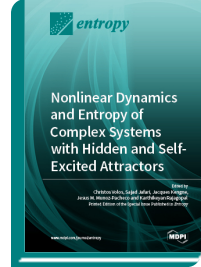


Special Issue Reprint

Nonlinear Dynamics and Entropy of Complex Systems with Hidden and Self-excited Attractors

www.mdpi.com/books/reprint/1279

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ISBN 978-3-03897-898-5 (Softback)
ISBN 978-3-03897-899-2 (PDF)

In recent years, entropy has been used as a measure of the degree of chaos in dynamical systems. Thus, it is important to study entropy in nonlinear systems. Moreover, there has been increasing interest in the last few years regarding the novel classification of nonlinear dynamical systems including two kinds of attractors: self-excited attractors and hidden attractors.

The localization of self-excited attractors by applying a standard computational procedure is straightforward. In systems with hidden attractors, however, a specific computational procedure must be developed, since equilibrium points do not help in the localization of hidden attractors. Some examples of this kind of system are chaotic dynamical systems with no equilibrium points; with only stable equilibria, curves of equilibria, and surfaces of equilibria; and with non-hyperbolic equilibria. There is evidence that hidden attractors play a vital role in various fields ranging from phase-locked loops, oscillators, describing convective fluid motion, drilling systems, information theory, cryptography, and multilevel DC/DC converters.

This Special Issue is a collection of the latest scientific trends on the advanced topics of entropy, fractional order calculus, and applications in complex systems with self-excited and hidden attractors.



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