<<双曲混沌>>

图书基本信息

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内容概要

本书从物理学而不是数学概念的角度介绍了目前动力系统中均匀双曲吸引子研究的进展小结构稳定的吸引子表现出强烈的随机性，但是对于动力系统中函数和参数的变化不敏感。
基于双曲混沌的特征，本书将展示如何找到物理系统中的双曲混沌吸引子，以及怎样设计具有双曲混沌的物理系统。

本书可以作为研究生和高年级本科生教材，也可以供大学教授以及物理学、机械学和工程学相关研究人员参考。

作者简介

Kuznetsov博士是非线性和混沌动力学方面的著名科学家。
他是俄罗斯萨拉托夫国立大学非线性过程系的教授，已经出版了三本混沌动力学及其应用方面的专著。

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章节摘录

版权页：插图：The epithet uniformly hyperbolic means that the rates of exponential growth of decay of magnitudes of vectors relating to the stable and unstable manifolds are bounded and detached from zero by some （globally defined） constants. In the phase space a set of trajectories, which approaches the reference orbit in the course of forward evolution in time, is called the stable manifold. Similarly, the unstable manifold is a set of trajectories, which approaches the reference orbit in reverse time. For hyperbolic orbits these sets are indeed manifolds, that means they are smooth objects like curves, surfaces or hyper-surfaces in the phase space; this is a conclusion of special theorem （known as the Hadamard-Perron theorem） （Anosov, 1967; Katok and Hasselblatt, 1995; Barreira and Pesin, 2001）.Uniformly hyperbolic saddle trajectories, and invariant sets composed of such trajectories may occur in phase spaces of both conservative and dissipative systems, but in this book we concentrate on the dissipative case. Hence, we will deal with such a kind of the hyperbolic invariant sets as the uniformly hyperbolic attractors.The uniformly hyperbolic attractor is a bounded attracting invariant set in the phase space of a dissipative system, composed exclusively of uniformly hyperbolic saddle trajectories, and near all these trajectories the phase space is arranged locally in one and the same manner. Manifolds for all trajectories belonging to the attrac-tor must have the same dimension. The intersections between stable and unstable manifolds are allowed only at nonzero angles （touches are excluded）.

编辑推荐

《双曲混沌:一个物理学家的观点(英文版)》为非线性物理科学之一。

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