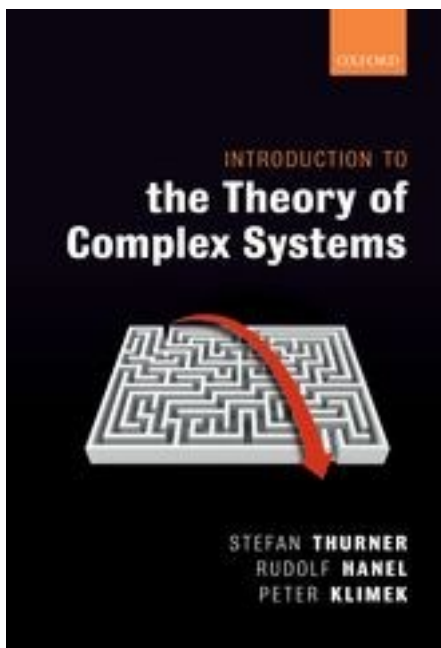


Introduction to the Theory of Complex Systems



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This book is a comprehensive introduction to quantitative approaches to complex adaptive systems. Practically all areas of life on this planet are constantly confronted with complex systems, be it ecosystems, societies, traffic, financial markets, opinion formation and spreading, or the internet and social media. Complex systems are systems composed of many elements that interact strongly with each other, which makes them extremely rich dynamical systems showing a huge range of phenomena. Properties of complex systems that are of particular importance are their efficiency, robustness, resilience, and proneness to collapse.

The quantitative tools and concepts needed to understand the co-evolutionary nature of networked systems and their properties are challenging. The book gives a

self-contained introduction to these concepts, so that the reader will be equipped with a toolset that allows them to engage in the science of complex systems. Topics covered include random processes of path-dependent processes, co-evolutionary dynamics, dynamics of networks, the theory of scaling, and approaches from statistical mechanics and information theory. The book extends beyond the early classical literature in the field of complex systems and summarizes the methodological progress made over the past 20 years in a clear, structured, and comprehensive way.

作者介绍:

目录: 1 Introduction to Complex Systems
2 Probability and Random Processes
3 Scaling
4 Networks
5 Evolutionary Processes
6 Statistical Mechanics and Information Theory for Complex Systems
7 The Future of the Science of Complex Systems?
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标签

复杂系统

complexity

英文原版

科学

评论

为了写作搜集资料冲动购物，然后为了不白花这60刀，硬着头皮看完了……第1、3、6章可能因为是作者物理本行的缘故，写得很透彻。数学总体上比较平缓，但第6章引入作者自己的generalized

entropy之后突然陡峭起来，我也就顺理成章地放飞自我不细看了。以前基本不了解这领域，感觉能用一套概念框架把这些东西装起来，还是很好的一本教科书，虽然，可能即使对研究者而言，也并没有什么卵用……

Chapter 6 is skipped, and seems to be very important to learn in future to learn about the generalization of entropy.

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书评

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