

## <<计算复杂性的现代方法>>

### 图书基本信息

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### 内容概要

本书是一部将所有有关复杂度知识理论集于一体的教程。将最新进展和经典结果结合起来，是一部很难得的研究生入门级教程。既是相关科研人员的一部很好的参考书，也是自学人员很难得的一本很好自学教程。本书一开始引入该领域的最基本知识，然后逐步深入，介绍更多深层次的结果，每章末都附有练习。对复杂度感兴趣的人士，物理学家，数学家以及科研人员这本书都是相当受益。

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## 章节摘录

版权页：插图： Physicists, mathematicians, and other scientists. This group has become increasingly interested in computational complexity theory, especially because of high-profile results such as Shor's algorithm and the recent deterministic test for primality. This intellectually sophisticated group will be able to quickly read through Part . Progressing on to Parts and , they can read individual chapters and find almost everything they need to understand current research. Computer scientists who do not work in complexity theory per se. They may use the book for self-study, reference, or to teach an undergraduate or graduate course in theory of computation or complexity theory. Anyone—professors or students—who does research in complexity theory or plans to do so. The coverage of recent results and advanced topics is detailed enough to prepare readers for research in complexity and related areas. Undergraduate theory of computation. Many computer science (CS) departments offer an undergraduate Theory of Computation course, using, say, Sipser's book (Sip96). Our text could be used to supplement Sipser's book with coverage of some more modern topics, such as probabilistic algorithms, cryptography, and quantum computing. Undergraduate students may find these more exciting than traditional topics, such as automata theory and the finer distinctions of computability theory. The prerequisite mathematical background would be some comfort with mathematical proofs and discrete mathematics, as covered in the typical "discrete math" or "math for CS" courses currently offered in many CS departments. Introduction to computational complexity for advanced undergrads or beginning grads. The book can be used as a text for an introductory complexity course aimed at advanced undergraduate or graduate students in computer science (replacing books such as Papadimitriou's 1994 text (Pap94) that do not contain many recent results). Such a course would probably include many topics from Part and then a sprinkling from Parts and and assume some background in algorithms and/or the theory of computation. Graduate complexity course. The book can serve as a text for a graduate complexity course that prepares graduate students for research in complexity theory or related areas like algorithms and machine learning. Such a course can use Part to review basic material and then move on to the advanced topics of Parts and . The book contains far more material than can be taught in one term, and we provide on our Web site several alternative outlines for such a course.

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