

<<设计理论>>

图书基本信息

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## 前言

The present book is based on the lecture notes of a graduate course Design Theory which was given at the Center for Combinatorics of Nankai University in spring of 2001. The lecture notes were scattered over the experts and students, modified year by year following some of their suggestions, and finally came to the present form. The course consists of mainly the basic classical subjects of design theory, namely, balanced incomplete block designs, latin squares,  $t$ -designs and partially balanced incomplete block designs, and ends with association schemes. The fundamental concepts of balanced incomplete block designs are given in Chapter 1 and various classical constructions appear in Chapters 2 and 3. Orthogonal latin squares are studied in Chapter 4. The construction of some families of balanced incomplete block designs, like Steiner triple systems and Kirkman triple systems, appears in Chapter 6, and as a preparation pairwise balanced designs and group divisible designs are introduced in Chapter 5.  $t$ -designs and partially balanced incomplete block designs, as generalizations of balanced incomplete block designs, are studied in Chapters 7, 8 and Chapter 9, respectively. The author is mostly grateful to Professor Rodney Roberts of Florida State University, Professor Shenglin Zhou of South China University of Technology and Professor Lie Zhu of Soochow University, who read the manuscript carefully, pointed out many typos and give valuable suggestions. Professor Zhou also prepared the bibliography and exercises for the book. Finally.

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## 内容概要

This book deals with the basic subjects of design theory. It begins with balanced incomplete block designs, various constructions of which are described in ample detail. In particular, finite projective and affine planes, difference sets and Hadamard matrices, as tools to construct balanced incomplete block designs, are included. Orthogonal latin squares are also treated in detail. Zhu's simpler proof of the falsity of Euler's conjecture is included. The construction of some classes of balanced incomplete block designs, such as Steiner triple systems and Kirkman triple systems, are also given. T-designs and partially balanced incomplete block designs (together with association schemes) as generalizations of balanced incomplete block designs, are included. Some coding theory related to Steiner triple systems are clearly explained. The book is written in a lucid style and is algebraic in nature. It can be used as a text or a reference book for graduate students and researchers in combinatorics and applied mathematics. It is also suitable for self-study.

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### 编辑推荐

《设计理论》由高等教育出版社与新加坡世界科技出版社（WSP）合作出版，全球发行。

设计理论是组合数学的一个重要分支，《设计理论》是根据作者在南开大学组合中心为研究生讲课的讲义，润色、补充而成，是一本设计理论的引论性书籍，涵盖最基本的古典设计理论。

内容包括：Symmetric BIBDs、Resolvable BIBDs、Orthogonal Latin Squares等。

《设计理论》适合组合数学、计算机科学等相关专业的学生和教师使用参考。

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