

CONTENTS

<i>Chapter</i>		<i>Page</i>
I	INTRODUCTION	1
	Finite groups	1
	Galois fields	2
	Finite projective geometries	3
	Finite Euclidean spaces	5
	Difference sets, and systems of difference sets	5
II	BALANCED INCOMPLETE BLOCK DESIGNS	7
	Finite spaces	8
	Conics	9
	Incidence matrix	12
	Existence theorems	14
	Structure	20
III	LATIN SQUARES AND ORTHOGONAL ARRAYS	22
	Latin squares	22
	Latin rectangles	23
	Orthogonal sets of Latin squares	24
	Graeco-Latin squares based on groups	28
	Existence theorems	30
	Orthogonal arrays	32
	Construction	33
	Maximal strength	39
	MacNeish's theorem	43
	Orthogonal Latin squares	44
	The falsity of Euler's conjecture	47
	The complete theorem on Graeco-Latin squares	51
IV	PARTIALLY BALANCED INCOMPLETE BLOCK DESIGNS	54
	Definition	54
	Construction	56
	Various association schemes	59
	Association matrices	62
	Self-dual designs	64
	Partially balanced incomplete block designs through inversion	66

<i>Chapter</i>		<i>Page</i>
V	PARTIALLY BALANCED INCOMPLETE BLOCK DESIGNS WITH TWO ASSOCIATE CLASSES	71
	Introduction	71
	Classification	77
	(A) Group-divisible designs	77
	Types of group-divisible designs	81
	Structure	82
	(B) Triangular association scheme	84
	(C) Latin square type designs	86
	Solutions to Exercises	91
	Bibliography	100
	Index	109