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This book is dedicated to Crispin Nash-Williams
19 December 1932 – 20 January 2001



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Preface

On the occasion of the 18th British Combinatorial Conference at the University of Sussex, 1 to 6 July, 2001, this book comprises the survey papers by the nine invited speakers and a memoir of Crispin Nash-Williams, past chairman of the British Combinatorial Committee.

The survey papers range across many parts of modern combinatorics.

Martin Aigner discusses the ideas of Penrose on the 4-colour problem, as well as the application of Penrose polynomials to other combinatorial structures.

Ian Anderson surveys some of the key ideas in the study of cyclic designs, including some of the classical results of the past 150 years as well as some very recent developments.

Robert Calderbank and Ayman Naguib show the connection between the practice of wireless communication with the mathematics of quadratic forms developed by Radon and Hurwitz about a hundred years ago. This occurs through orthogonal designs, known as space-time block codes in the communications literature.

Leslie Goldberg surveys the computational problems of randomly sampling unlabelled combinatorial structures, and of counting and approximately counting unlabelled structures.

Bojan Mohar considers the interplay between graph minors and graphs embedded in surfaces.

Michael Molloy surveys the progress on two fundamental problems in random graphs and random boolean formulae. The first is the question of how many edges must be added to a random graph until it is not almost surely k -colourable.

James Oxley considers aspects of the interplay between graphs and matroids, and shows the fruitfulness for both fields of applying results from the other.

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Preface

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Joseph Thas considers the geometrical structures fundamental to finite simple groups, namely finite classical polar spaces, and the properties of their substructures.

Douglas Woodall discusses two problems of graph theory associated to colourings of a graph in which each vertex receives a colour from a prescribed list of colours.

The conference is grateful for the support of the London Mathematical Society, the Institute of Combinatorics and its Applications, Hewlett Packard, and AT&T.

James Hirschfeld
University of Sussex
4 March 2001