

# Groupes topologiques : groupes et algèbres de Lie

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Christopher PARKER, Peter ROWLEY. — **Symplectic amalgams.** — Springer monographs in mathematics. — Un vol. relié,  $16 \times 24$ , de XI, 361 p. — ISBN 1-85233-430-4. — Prix: € 79.95. — Springer, London, 2002.

The latter half of the twentieth century saw dramatic advances in group theory, particularly in finite group theory. During this time, the amalgam method emerged as the most powerful and promising tool and is playing a central role in the revision of the classification of finite simple groups. In this book, the authors chart the rise of the “amalgam method” and aim to classify symplectic amalgams with the intention of providing a complete overview of research in the field that will be accessible to both specialist and non-specialist alike. The aim of this book is the classification of symplectic amalgams – structures which are intimately related to the finite simple groups. In all there are sixteen infinite families of symplectic amalgams together with 62 more exotic examples. The classification touches on many important aspects of modern group theory:  $p$ -local analysis; the amalgam method; representation theory over finite simple groups.

Lluís PUIG. — **Blocks of finite groups: the hyperfocal subalgebra of a block.** — Springer monographs in mathematics. — Un vol. relié,  $16 \times 24$ , de 213 p. — ISBN 3-540-43514-X. — Prix: SFr. 116.50. — Springer, Berlin, 2002.

About sixty years ago, Richard Brauer introduced the blocks in the study of the group algebra  $kG$  of a finite group  $G$  over a field  $k$  of nonzero characteristic. The most remarkable discovery might be the families of infinitely many nonisomorphic groups having a block in common. This book is an introduction to block theory including most of the main results about this discovery. From common knowledge on algebras and elementary knowledge of linear group representations, it starts by doing  $p$ -adic completion and lifting idempotent results, and reaches a complete proof of the existence and uniqueness of the hyperfocal subalgebra of a block.

Jacques TITS, Richard M. WEISS. — **Moufang polygons.** — Springer monographs in mathematics. — Un vol. relié,  $16 \times 24$ , de IX, 535 p. — ISBN 3-540-43714-2. — Prix: € 79.95. — Springer, Berlin, 2002.

This book gives the complete classification of Moufang polygons. It also contains a new proof of the classification of irreducible spherical buildings of rank at least three based on the observation that all the irreducible rank two residues of such a building are Moufang polygons. In an appendix, the connection between spherical buildings and algebraic groups is recalled and used to describe an alternative existence proof for the exceptional Moufang polygons.

## ***Groupes topologiques : groupes et algèbres de Lie***

Ignacio BAJO, Esperanza SANMARTÍN, (Editors). — **Recent advances in Lie theory.** — Research expositions in mathematics, vol. 25. — Un vol. broché,  $17 \times 24$ , de 398 p. — ISBN 3-88538-225-3. — Prix: € 44.00. — Heldermann Verlag, Lemgo, Allemagne, 2002.

Lie theory is known to play a crucial role in many fields of mathematics and physics. Apart from their obvious geometric and algebraic importance, Lie groups and Lie algebras have turned out to be of fundamental significance in differential equations, quantum mechanics, algebraic geometry, topology and the theory of special functions. The aim of this book is to provide the reader with a general view of recent research directions, represented in 23 articles, in most of these topics. The papers collected in this volume are updated versions of selected contributions to the “Colloquium on Lie Theory and Applications”, which took place at the University of Vigo, Spain, in July 2000. The programme of the colloquium included three short courses delivered by Prof. D.V. Alekseevsky, A.T. Fomenko and M. Scheunert. The corresponding papers appear at the beginning of this book.