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3-manifolds. — J. Mennicke: Linear groups over rings of integers. — Ch. Menzel, J.R. Parker: Pseudo-Anosov diffeomorphisms of the twice punctured torus. — M. Mulazzani: 3-manifolds with cyclic symmetry and (1,1)-knots. — A. Szczepański: Holonomy groups of crystallographic groups with finite outer automorphism groups. — K.-I. Tahara: Survey on dimension subgroup problem.

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

Brian C. HALL. — **Lie groups, Lie algebras, and representations: an elementary introduction.** — Graduate texts in mathematics, vol. 222. — Un vol. relié,  $16 \times 24$ , de xiv, 351 p. — ISBN 0-387-40122-9. — Prix: € 64.95. — Springer, New York, 2003.

This book addresses Lie groups, Lie algebras, and representation theory. In order to keep the prerequisites to a minimum, the author restricts attention to matrix Lie groups and Lie algebras. This approach keeps the discussion concrete, allows the reader to get to the heart of the subject quickly, and covers all the most interesting examples. The book introduces the often-intimidating machinery of roots and the Weyl group in a gradual way, using examples and representation theory as motivation. The first part of the text covers Lie groups and Lie algebras and the relationship between them, along with basic representation theory. The second covers the theory of semisimple Lie groups and Lie algebras, beginning with a detailed analysis of the representations of  $SU(3)$ . The author illustrates the general theory with numerous images pertaining to Lie algebras of rank two and rank three, including images of root systems, lattices of dominant integral weights, and weight diagrams. This book is sure to become a standard textbook for graduate students in mathematics and physics with little or no prior exposure to Lie theory.

Shrawan KUMAR. — **Kac-Moody groups, their flag varieties and representation theory.** — Progress in mathematics, vol. 204. — Un vol. relié,  $16,5 \times 24$ , de xiii, 606 p. — ISBN 0-8176-4227-7. — Prix: € 159.00. — Birkhäuser, Boston, 2002.

Kac-Moody (K-M) groups are a standard tool in mathematics and mathematical physics having undergone tremendous developments in various directions over the last decades. K-M theory has indeed made profound connections with such diverse areas as number theory, combinatorics, topology, moduli of vector bundles, singularities, quantum groups, completely integrable systems, and mathematical physics. — *Key features*: A comprehensive, well-written exposition of K-M theory, moving the reader in a systematic fashion from K-M Lie algebras to the broader group setting; in particular, the algebro-geometric, topological and representation-theoretic aspects of K-M theory are treated. — No prior knowledge of K-M Lie algebras or of (finite-dimensional) algebraic groups is required. — Several examples, an extensive bibliography, and thorough index. — Numerous exercises, some with hints, at the end of each section. — Challenging open problems. — A self-contained text containing material not available elsewhere in book form.

## *Fonctions d'une variable complexe*

Mark J. ABLOWITZ, Athanassios S. FOKAS. — **Complex variables: introduction and applications.** — Second edition. — Cambridge texts in applied mathematics. — Un vol. broché,  $15 \times 23$ , de xii, 647 p. — ISBN 0-521-53429-1. — Prix: £ 29.95. — Cambridge University Press, Cambridge, 2003.

Part I of this text provides an introduction to the subject, including analytic functions, integration, series, and residue calculus. It also includes transform methods, ordinary differential