

Analyse combinatoire

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Arild STUBHAUG. — **Niels Henrik Abel et son époque.** — Traduit par Patricia CHWAT et Nicolas PUECH. — Un vol. broché, 15,5×23,5, de XII, 463 p. — ISBN 2-287-59746-8. — Prix: € 53.03. — Springer, Paris, 2004.

L'auteur nous relate le destin singulier de Niels Henrik Abel (1802-1829), qui fut l'un des plus grands génies des mathématiques, en le replaçant dans le contexte culturel et politique de l'époque. Au cours d'une vie exceptionnellement brève et fertile, ce jeune Norvégien résout un problème séculaire et ouvre de nouvelles voies. En compagnie d'Abel et de ses amis, le lecteur est invité à parcourir la Norvège et une grande partie de l'Europe du XIX^e siècle. Il se rend au théâtre, croise Hegel, fréquente des salons littéraires, attend l'avis de l'Académie des sciences à Paris, rencontre les grands mathématiciens. En cette période troublée, il assiste à l'évolution politique de la Norvège qui s'affranchit de la tutelle danoise pour jeter les fondations de son indépendance. Abel meurt de tuberculose, criblé de dettes, sans avoir obtenu un poste digne de son talent. L'Académie des sciences lui décerne un grand prix à titre posthume. En 1902, la Norvège lui rend un hommage national. L'année 2002 voit la création du prix Abel décerné tous les ans au plus grand mathématicien et destiné à pallier l'absence de prix Nobel dans la discipline.

Logique et fondements

Thomas FORSTER. — **Logic, induction and sets.** — London Mathematical Society student texts, vol. 56. — Un vol. broché, 15×23, de X, 234 p. — ISBN 0-521-53361-9 (relié: 0-521-82621-7). — Prix: £ 18.95 (relié: £ 50.00). — Cambridge University Press, Cambridge, 2003.

This is an introduction to logic and the axiomatization of set theory from a unique standpoint. Philosophical considerations, which are often ignored or treated casually, are here given careful consideration: furthermore, the author places the notion of inductively defined sets (recursive datatypes) at the center of his exposition, resulting in a treatment of well-established topics that is fresh and insightful. The presentation is engaging, but great care is always taken to illustrate difficult points. Understanding is also aided by the inclusion of many exercises. Little previous knowledge of logic is required of the reader, and only a background of standard undergraduate mathematics is assumed.

Analyse combinatoire

C.D. WENSLEY, (Editor). — **Surveys in combinatorics 2003.** — London Mathematical Society lecture note series, vol. 307. — Un vol. broché, 15×23, de VII, 370 p. — ISBN 0-521-54012-7. — Prix: £ 34.95. — Cambridge University Press, Cambridge, 2003.

The British Combinatorial Conference (BCC) is held every two years and is a key event for mathematicians worldwide working in combinatorics. In June 2003 the conference was held at the University of Wales, Bangor. The papers contained here are the surveys contributed by the invited speakers and are of the high quality that befits the event. — *Contents*: Norman Biggs: W.T. Tutte, 1917-2002. — L.D. Andersen and C.A. Rodger: Decompositions of complete graphs: embedding partial edge-colourings and the method of amalgamations. — Simon R. Blackburn: Combinatorial schemes for protecting digital content. — A.V. Borovik: Matroids and Coxeter groups. — D.M. Donovan, E.S. Mahmoodian, C. Ramsay and A.P. Street: Defining sets in combinatorics: a survey. — D. Ghinelli and D. Jungnickel: Finite projective planes with a large

Abelian group. — P. Hell: Algorithmic aspects of graph homomorphisms. — V. Kaibel and G.M. Ziegler: Counting lattices triangulations. — I. Leader: Partition regular equations. — K. Nelsen and A. Ram: Kostka-Foulkes polynomials and Macdonald spherical functions.

Théorie des nombres

Jean-Paul ALLOUCHE, Jeffrey SHALLIT. — **Automatic sequences: theory, applications, generalizations.** — Un vol. relié, 18×26 , de xvi, 571 p. — ISBN 0-521-82332-3. — Prix: £37.50. — Cambridge University Press, Cambridge, 2003.

Uniting dozens of disparate results from different fields, this book combines concepts from mathematics and computer science to present the first integrated treatment of sequences generated by the simple model of computation called the finite automaton. The authors develop the theory of automatic sequences and their generalizations, such as Sturmian words and k -regular sequences. Further, they discuss applications to number theory (particularly formal power series and transcendence in finite characteristic), physics, computer graphics, and music. Results are presented from first principles where feasible, and the book is supplemented by a collection of 460 exercises, 85 open problems, and more than 1600 citations to the literature. Thus, this book is suitable for graduate students or advanced undergraduates, as well as for mature researchers wishing to know more about this fascinating subject.

Joseph BERNSTEIN, Stephen GELBART, (Editors). — **An introduction to the Langlands program.** — Un vol. broché, $15 \times 23,5$, de viii, 281 p. — ISBN 0-8176-3211-5. — Prix: SFr. 72.00. — Birkhäuser, Basel, 2003.

This monograph presents a broad, user-friendly introduction to the Langlands program, that is, the theory of automorphic forms and its connection with the theory of L -functions and other fields of mathematics. — *Key features:* Basic zeta function of Riemann and its generalizations to Dirichlet and Hecke L -function, class field theory and some topics on classical automorphic functions (E. Kowalski). — A study of the conjectures of Artin and Shimura-Taniyama-Weil (E. de Shalit). — An examination of classical modular (automorphic) L -functions as $GL(2)$ functions, bringing into play the theory of representations (S. Kudla). — Selberg's theory of the trace formula, which is a way to study automorphic representations (D. Bump). — Discussion of cuspidal automorphic representations of $GL(2)$ leads to Langlands theory for $GL(n)$ and the importance of the Langlands dual group (J. Cogdell). — An introduction to the geometric Langlands program, a new and active area of research that permits using powerful methods of algebraic geometry to construct automorphic sheaves (D. Gaitsgory).

Shigeru KANEMITSU, Chaohua JIA, (Editor). — **Number theoretic methods: future trends.** — Developments in mathematics, vol. 8. — Un vol. relié, $16,5 \times 24,5$, de x, 439 p. — ISBN 1-4020-1080-X. — Prix: € 173.00. — Kluwer, Dordrecht, 2003.

This volume contains the proceedings of the very successful second China-Japan Seminar held in Iizuka, Fukuoka, Japan, during March 12-16, 2001 under the support of the Japan Society for the Promotion of Science (JSPS) and the National Science Foundation of China (NSFC), and some invited papers of eminent number-theorists who visited Japan during 1999-2001 at the occasion of the Conference at the Research Institute of Mathematical Science (RIMS), Kyoto University. The book, in keeping with the spirit of the earlier volume, *Number Theory and its Applications* (Developments in mathematics, vol. 4), presents various topics in number theory from current and future research in a unified manner with a collection of state-of-the-art research