

Géométrie algébrique

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Michael ROSEN. — **Number theory in function fields.** — Graduate texts in mathematics, vol. 210. — Un vol. relié, 16×24 , de XII, 358 p. — ISBN 1-85233-437-1. — Prix: € 54.95. — Springer, New York, 2002.

Elementary number theory is concerned with arithmetic properties of the ring of integers. Early in the development of number theory, it was noticed that the ring of integers has many properties in common with the ring of polynomials over a finite field. The first part of this book illustrates this relationship by presenting analogues of the theorems of Fermat and Euler, Wilson's theorem, quadratic (and higher) reciprocity, the prime number theorem, and Dirichlet's theorem on primes in an arithmetic progression. After presenting the required foundational material on function fields, the later chapters explore the analogy between global function fields and algebraic number fields. A variety of topics are presented, including the ABC-conjecture, Artin's conjecture on primitive roots, the Brumer-Stark conjecture, Drinfeld modules, class number formulae, and average value theorems.

Corps et polynômes

Ian STEWART, David TALL. — **Algebraic number theory and Fermat's last theorem.** — 3rd edition. — Un vol. relié, $15 \times 23,5$, de XIX, 313 p. — ISBN 1-56881-119-5. — Prix: US\$38.00. — A. K. Peters, Natick, Mass., 2002.

This new, completely revised edition of a classic text introduces all elements necessary for understanding Wiles' proof, as well as new developments and unsolved problems. Written by two distinguished mathematicians, this book weaves together the historical development of the subject with a presentation of mathematical techniques. The result is a solid introduction to one of the most active research areas of mathematics for serious math buffs and a textbook accessible to undergraduates.

Géométrie algébrique

Olivier DEBARRE. — **Higher-dimensional algebraic geometry.** — Universitext. — Un vol. relié, 17×24 , de XIII, 233 p. — ISBN 0-387-95227-6. — Prix: € 44.95. — Springer, New York, 2001.

The book studies the classification theory of algebraic varieties. This very active area of research is still developing, but an amazing quantity of knowledge has accumulated over the past twenty years. The author's goal is to provide an easily accessible introduction to the subject. The book begins with preparatory and standard definitions and results, moves on to discuss various aspects of the geometry of smooth projective varieties with many rational curves, and finishes in taking the first steps towards Mori's minimal model program of classification of algebraic varieties by proving the cone and contraction theorems.

Gennady LYUBEZNIK, (Editor). — **Local cohomology and its applications.** — Lecture notes in pure and applied mathematics, vol. 226. — Un vol. broché, 18×26 , de IX, 342 p. — ISBN 0-8247-0741-9. — Prix: US\$150.00. — Marcel Dekker, New York, 2002.

This volume collects presentations from the International Workshop on Local Cohomology held in Guanajuato, Mexico, including expanded lectures notes of two minicourses on applications in equivariant topology and foundations of duality theory, and chapters on finiteness properties, D -modules, monomial ideals, combinatorial analysis, and related topics – providing survey articles of interest to experts and novices on recent developments in local cohomology and cohomology of projective schemes. The book discusses the Greenlees-May duality, algorithmic methods, cohomological Hilbert functions, equivariant K -theory, associated primes, squarefree modules, the Čech hull, residue methods... and more.

Kenji MATSUKI. — **Introduction to the Mori Program.** — Universitext. — Un vol. relié, 16×24, de XXIII, 478 p. — ISBN 0-387-98465-8. — Prix: € 74.95. — Springer, New York, 2002.

The purpose of this book is to give a comprehensible account of what is called the Mori Program, a fusion of the so-called Minimal Model Program and the Iitaka Program toward the biregular and/or birational classification of higher-dimensional algebraic varieties. The author presents this theory in an easy and understandable way with lots of background motivation: the Enriques classification of algebraic surfaces is given in the framework of the Mori Program. Prerequisites are those covered in Robin Hartshorne's book, *Algebraic Geometry*. It is the first "friendly" book in this extremely important and active area of research and will become a key resource for graduate students wanting to enter this area.

Algèbre linéaire et multilinéaire, théorie des matrices

T. S. BLYTH, E. F. ROBERSTON. — **Further linear algebra.** — Springer undergraduate mathematics series. — Un vol. broché, 17×24, de 230 p. — ISBN 1-85233-425-8. — Prix: € 34.95. — Springer, London, 2002.

Further Linear Algebra is a natural sequel to the authors' highly acclaimed SUMS volume *Basic Linear Algebra*. The more advanced topics covered here take the reader to the very heart of the subject, and include inner product spaces, direct sums of subspaces, the primary decomposition theorem and various canonical forms for matrices. Furthermore, the authors provide a brief introduction to the use of MAPLE in linear algebra calculations, and biographical profiles of eminent mathematicians associated with the subject. An introductory chapter recaps the prerequisites (for those readers unfamiliar with the first volume), and a wide range of worked examples and exercises (with solutions) are strategically placed throughout the text to consolidate understanding.

Robert C. DALANG, Amel CHAABOUNI. — **Algèbre linéaire: aide-mémoire, exercices et applications.** — Enseignement des mathématiques. — Un vol. broché, 16×24, de XII, 319 p. — ISBN 2-88074-483-0. — Prix: SFr. 93.90. — Presses polytechniques et universitaires romandes, Lausanne, 2001.

Ce volume présente d'abord les notions d'algèbre linéaire indispensables aux étudiants ingénieurs et généralement abordées au cours de la première année du cycle universitaire. Chaque chapitre est accompagné d'une grande variété d'exercices et de leur corrigé. Cette matière est ensuite illustrée par cinq applications de l'algèbre linéaire à des thèmes qui sont de nature à montrer à l'étudiant l'utilité de la théorie. Comment dessiner une fractale ou réaliser un stéréogramme? Que sont les codes correcteurs d'erreurs, ou les premières techniques de cryptographie? Qu'est-ce qu'une chaîne de Markov? Ces sujets, qui utilisent de près les notions d'algèbre linéaire, sont abordés de manière accessible et sont également accompagnés d'exercices.

Anneaux et algèbres

Flávio Ulhoa COELHO, Héctor A. MERKLEN, (Editors). — **Representations of algebras.** — Proceedings of the conference held in São Paulo. — Lecture notes in pure and applied mathematics, vol. 224. — Un vol. broché, 18×26, de XVII, 282 p. — ISBN 0-8247-0733-8. — Prix: US\$ 150.00. — Marcel Dekker, New York, 2002.

Containing papers selected from over 70 participants representing 17 countries, *Representations of Algebras* considers the existence of almost split morphisms and sequences... describes strongly simply connected derived tubular algebras... explores relationships between Koszul algebras and the Gorenstein condition... characterizes hereditary Noetherian categories