

# Généralités

Objektyp: **Chapter**

Zeitschrift: **L'Enseignement Mathématique**

Band (Jahr): **49 (2003)**

Heft 1-2: **L'ENSEIGNEMENT MATHÉMATIQUE**

PDF erstellt am: **21.07.2024**

## **Nutzungsbedingungen**

Die ETH-Bibliothek ist Anbieterin der digitalisierten Zeitschriften. Sie besitzt keine Urheberrechte an den Inhalten der Zeitschriften. Die Rechte liegen in der Regel bei den Herausgebern.

Die auf der Plattform e-periodica veröffentlichten Dokumente stehen für nicht-kommerzielle Zwecke in Lehre und Forschung sowie für die private Nutzung frei zur Verfügung. Einzelne Dateien oder Ausdrucke aus diesem Angebot können zusammen mit diesen Nutzungsbedingungen und den korrekten Herkunftsbezeichnungen weitergegeben werden.

Das Veröffentlichen von Bildern in Print- und Online-Publikationen ist nur mit vorheriger Genehmigung der Rechteinhaber erlaubt. Die systematische Speicherung von Teilen des elektronischen Angebots auf anderen Servern bedarf ebenfalls des schriftlichen Einverständnisses der Rechteinhaber.

## **Haftungsausschluss**

Alle Angaben erfolgen ohne Gewähr für Vollständigkeit oder Richtigkeit. Es wird keine Haftung übernommen für Schäden durch die Verwendung von Informationen aus diesem Online-Angebot oder durch das Fehlen von Informationen. Dies gilt auch für Inhalte Dritter, die über dieses Angebot zugänglich sind.

## BULLETIN BIBLIOGRAPHIQUE

---

### *Généralités*

Élie AZOULAY, Jean AVIGNANT, Guy AULIAC. — **Problèmes corrigés de mathématiques: épreuves du DEUG MIAS/SM, 1<sup>ère</sup> année.** — 2<sup>e</sup> édition. — Un vol. broché, 15×23, de VII, 215 p. — ISBN 2-10-006677-3. — Prix: € 18.00. — Ediscience, Paris, 2002.

Après que l'étudiant ait fait usage des livres de cours et résolu un certain nombre d'exercices permettant de contrôler ses acquisitions, il ressent le besoin de préparer plus spécialement l'examen grâce à des épreuves réelles. C'est à cette fin que répondent les présents volumes dans lesquels nous avons rassemblé des épreuves pour la plupart proposées soit à un examen partiel, soit à un examen final du DEUG Sciences provenant de diverses universités; le tome 1 est essentiellement destiné aux étudiants de 1<sup>ère</sup> année, le tome 2 à ceux de 2<sup>e</sup> année. Les épreuves présentées ici se répartissent en deux types. Les unes consistent en une suite d'exercices portant sur des thèmes très différents. D'autres, plus traditionnelles et plus structurées, portent sur un ou plusieurs thèmes majeurs. L'ensemble reflète donc la diversité des sujets auxquels peuvent être confrontés les étudiants.

Elwyn R. BERLEKAMP, John H. CONWAY, Richard K. GUY. — **Winning ways for your mathematical plays, vol. 2.** — Second edition. — Un vol. broché, 18,5×23,5, de XVII, p. 277-473. — ISBN 1-568881-142-X. — Prix: US\$ 39.00. — A. K. Peters, Natick, Massachusetts, 2003.

In the quarter of a century since three mathematicians and game theorists collaborated to create *Winning Ways for your Mathematical Plays*, the book has become the definitive work on the subject of mathematical games. Now carefully broken down into four volumes to accommodate new developments, the second edition retains the original's wealth of wit and wisdom, but in a more easily accessible format. The authors' insightful strategies, blended with their witty and irreverent styles, make reading a profitable pleasure. In Volume 2, the authors have a Change of Heart and bend the rules of Volume 1 to apply them to games that may continue indefinitely or in which "winning" is not necessarily making the last move, such as Cut-cake and Loopy Hackenbush. This essential companion to Volume 1 explores "partisan" games of infinitely many positions and "loopy" unending and impartial games with the same playful tone and rigorous mathematical analysis perfected in the first volume of this classic work.

Hassan BOUALEM, Robert BROUZET. — **La planète R: voyage au pays des nombres réels: avec exercices corrigés.** — Un vol. broché, 17×24, de VIII, 248 p. — ISBN 2-10-005940-8. — Prix: € 22.50. — Dunod, Paris, 2002.

Dans l'univers des mathématiques, les réels, êtres aux propriétés mystérieuses, ont leur planète... Découvrez-la et percez ses secrets grâce à cet ouvrage original, conçu comme un

recueil de courtes leçons, classées en trois parties: Les aspects arithmétiques (irrationalité, transcendance...), les constructions et représentations des réels, les sous-ensembles remarquables (mesurables, parfaits, maigre, ensemble de Cantor...). Les leçons sont abondamment pourvues d'exercices corrigés et complétées par des annexes comprenant notamment du vocabulaire de base en théorie des ensembles et en algèbre en général, ainsi que de rudiments de topologie.

Paul DOUKHAN, Jean-Claude SIFRE. — **Cours d'analyse, tome 2: calcul différentiel, intégration et probabilités.** — Agrégation de mathématiques. — Un vol. broché, 17,5×25, de XVIII, 486 p. — ISBN 2-10-005318-3. — Prix: €42.00. — Dunod, Paris, 2002.

Ce cours d'analyse vise la préparation à l'épreuve écrite d'analyse et probabilités de l'Agrégation de mathématiques. Ce second volume est orienté vers l'étude des fonctions de plusieurs variables réelles et les probabilités. Le calcul différentiel et ses grands théorèmes sont présentés dans un souci de vision géométrique et d'effectivité dans les preuves. Ils servent de base à une étude qualitative moderne des équations différentielles (linéaires et non linéaires) et la stabilité de leurs solutions, ainsi qu'aux fonctions analytiques, et à une approche de la géométrie différentielle (sous-variétés de  $\mathbf{R}^d$ ). Les conséquences de la variation bornée des fonctions et des mesures complètent l'intégration vue dans le premier volume. L'ouvrage s'achève par des chapitres plus appliqués sur les transformations intégrales, les ondelettes et une introduction aux probabilités.

Anthony JOSEPH, Anna MELKINOV, Rudolf RENTSCHLER, (Editors). — **Studies in memory of Issai Schur.** — Progress in mathematics, vol. 200. — Un vol. relié, 16×24, de CLXXXIII, 365 p. — ISBN 0-8176-4208-0. — Prix: SFr. 186.00. — Birkhäuser, Boston, 2003.

This volume is dedicated to the memory of Issai Schur. It opens with some biographical reminiscences of the famous school he established in Berlin, his brutal dismissal by the Nazi regime and his tragic end in Palestine. This is followed by an extensive review of the extraordinary impact of his lesser known analytic work. Finally, leading mathematicians working in the representation theory of the symmetric groups, of semisimple and affine Lie algebras and of Chevalley groups have contributed original and outstanding articles. These concern many areas inspired by Schur's work as well as more recent developments involving crystal and canonical bases, Hecke algebras, and the geometric approach linking orbits to representations.

Carolyn KIERAN, Ellice FORMAN, Anna SFARD, (Editors). — **Learning discourse: discursive approaches to research in mathematics education.** — Un vol. relié, 16,5×24,5, de 298 p. — ISBN 1-4020-1024-9. — Prix: €109.00. — Kluwer, Dordrecht, 2002.

The authors of this volume claim that mathematics can be usefully reconceptualized as a special form of communication. As a result, the familiar discussion of mental schemes, misconceptions, and cognitive conflict is transformed into a consideration of activity, patterns of interaction, and communication failure. By equating thinking with communicating, the discursive approach also deconstructs the problematic dichotomy between "individual" and "social" research perspectives. Although each author applies his or her own analyses to the discourse generated by students and teachers grappling with mathematical problems, their joint aim is to put discursive research into the limelight and to spur thinking about its nature and its possible advantages and pitfalls. This volume is therefore addressed both to those interested in specific questions regarding classroom communication, and to those who are looking for a general conceptual lens with which to tackle the complexity of mathematical teaching and learning.

Gilah C. LEDER, Erkki PEHKONEN, Günter TÖRNER, (Editors). — **Beliefs: a hidden variable in mathematics education?** — Mathematics Education Library. — Un vol. relié, 16,5×24,5, de XIX, 362 p. — ISBN 1-4020-1057-5. — Prix: € 138.00. — Kluwer, Dordrecht, 2002.

The book is divided into three, partly overlapping, sections. The first concentrates on conceptualisation and measurement of beliefs, the second on research about teachers' beliefs, and the third on facets of students' beliefs about mathematics. A diversity of instruments is used for data collection, including surveys, interviews, observations, and essay writing as well as more innovative approaches. The volume is intended for researchers in the field, as well as for mathematics educators teaching the next generation of students. The book is also useful for those working in other subject disciplines, since many of the themes explored have relevance well beyond mathematics education.

Jonathan LEWIN. — **An interactive introduction to mathematical analysis.** — Un vol. broché, 17,5×25, de XXXII, 492 p. — ISBN 0-521-01718-1. — Prix: £ 27.95. — Cambridge University Press, Cambridge, 2003.

This book provides a rigorous course in the calculus of functions of a real variable. The gentle approach, particularly in the early chapters, makes it especially suitable for students who are not headed for graduate school, but, for those who are, this book also provides the opportunity to engage in a penetrating study of real analysis. The CD bundles with the book contains an on-screen version with hundreds of links to alternative approaches, more complete explanations, and solutions to exercises – links that make it more friendly than any printed book could be. The on-screen version also provides exercises that can be worked interactively with the help of the computer algebra systems that are bundled with *Scientific Notebook*. The CD bundled with the book contains also a time-limited copy of *Scientific Notebook* and a copy of *Scientific Viewer* which are registered trademarks of MacKichan Software, Inc.

Alexander V. MIKHALEV, Günter F. PILZ. — **The concise handbook of algebra.** — Un vol. relié, 16×24, de XVI, 179 p. — ISBN 0-7923-7072-4. — Prix: € 126.00. — Kluwer, Dordrecht, 2002.

*The Concise Handbook of Algebra* provides a succinct, but thorough treatment of algebra. The editors have gone to great lengths to capture the core essence of the different ideas, concepts and results that make up algebra as we know it today. In a collection that spans about 150 sections organized in 9 chapters, algebraists are provided with a standard knowledge set for their areas of expertise. Other readers meanwhile, are equipped with a quick and dependable reference to the area as a whole. All of this is presented uniformly with cross-references linking the sections. The target audience consists of anyone interested in algebra, from graduate students to established researchers, including those who want to obtain a quick overview or a better understanding of the selected topics. — *Contents*: Semigroups. — Groups. — Rings, modules, algebras. — Fields. — Representation Theory. — Lattices. — Universal algebra. — Homological algebra. — Miscellaneous.

Annelies PAULITSCH. — **Spiele, Spiele, Spiele: den Zahlen abgeguckt und für den Mathematikunterricht aufbereitet.** — Kopiervorlagen Mathematik. — Un vol. broché-spirale, 22×30, de 112 p. — ISBN 3-7614-2442-6. — Prix: € 19.50. — Aulis Verlag Deubner, Köln, 2002.

Eine häufige Erfahrung, die Lehrkräfte machen: Spiele sind nun mal beliebter als Übungen! Dieser Erkenntnis kommt dieser Band entgegen, denn er hält 22 Spiele für die Klassen 5 und 6 bereit. Er umfasst Kopiervorlagen mit vielfältigen, grafisch anregend gestalteten Aufgabstellungen sowie dazugehörige Lösungsblätter. Die beiden Hauptkapitel umfassen Spiele mit natürlichen Zahlen, Mengen und Relationen sowie Spiele mit Brüchen, Dezimalzahlen und ganzen Zahlen.



Burkard POLSTER. — **The mathematics of juggling.** — Un vol. broché,  $15,5 \times 23,5$ , de xvii, 226 p. — ISBN 0-387-95513-5. — Prix: € 39.95. — Springer, New York, 2003.

Learn to juggle numbers! This book is the first comprehensive account of the mathematical techniques and results used in the modelling of juggling patterns. This includes all known and many new results about juggling sequences and matrices, the mathematical skeletons of juggling patterns. Many useful and entertaining tips and tricks spice up the mathematical menu presented in this book. There are detailed descriptions of jugglable and attractive juggling sequences, easy zero-gravity juggling, robot juggling, as well as fun juggling of words, antiballs, and irrational numbers. The book also includes novel, or at least not very well-known, connections with topics such as bell ringing, knot theory, and the many-body problem. In fact, the chapter on mathematical bell ringing has been expanded into the most comprehensive survey in the literature of the mathematics used by bell ringers.

Derek J.S. ROBINSON. — **An introduction to abstract algebra.** — De Gruyter textbook. — Un vol. broché,  $17 \times 24$ , de x, 282 p. — ISBN 3-11-017544-4. — Prix: € 40.14. — Walter de Gruyter, Berlin, 2003.

Introducing the main concepts of modern algebra, the book contains numerous applications, which are intended to illustrate the concepts and to convince the reader of the utility and relevance of algebra today. In particular applications to Pólya coloring theory, latin squares, Steiner systems and error correcting codes are described. Another feature of the book is that group theory and ring theory are carried further than is often done at this level. There is ample material here for a two semester course in abstract algebra. The importance of proof is stressed and rigorous proofs of almost all results are given. But care has been taken to lead the reader through proofs by gentle stages. There are nearly 400 problems, of varying degrees of difficulty, to test the reader's skill and progress.

Hans J. SCHMIDT, Kathrein SCHADOW. — **Prof. Dr. R. E. Member's Mathe-memo.** — Kopiervorlagen Mathematik. — Un vol. broché-spirale,  $22 \times 30$ , de 96 p. — ISBN 3-7614-2437-X. — Prix: € 17.50. — Aulis-Verlag Deubner, Köln, 2002.

Der Autor H. J. Schmidt hat das Prinzip des Memory auf die Freiarbeit im Mathematikunterricht der S I angewandt. Einstanden sind dabei 11 Memo-Spiele mit jeweils 72 Karten (36 „Pärche“). Wie im Memory gewohnt, versucht man entsprechende „Pärchen“ aufzudecken. Beim Mathe-Memo sind diese Karten durch mathematische Beziehungen verbunden, die es zu durchschauen oder zu errechnen gilt. Die Themen umfassen: Grundwissen Bruchrechnen – Grundwissen Geometrie – Römische Zahlzeichen – Zehnersystem – Quadratzahlen – Zweiersystem – Dezimalbrüche – Koordinatensystem. – Lineare Funktionen – Quadratische Funktionen Satz des Vieta. — Fazit: Die Spielform „Memo“ ermöglicht methodische Abwechslung, und die Schüler können nach festgelegten Regeln eigenverantwortlich arbeiten.

Gilbert A. VALVERDE, Leonard J. BIANCHI, Richard G. WOLFE, William H. SCHMIDT, Richard T. HOUANG. — **According to the Book: using TIMSS to investigate the translation of policy into practice through the world of textbooks.** — Un vol. relié,  $16 \times 25$ , de ix, 199 p. — ISBN 1-4020-1033-8. — Prix: € 85.00. — Kluwer, Dordrecht, 2002.

How are curriculum policies translated into opportunities to learn in the classroom? *According to the Book* presents findings from the largest cross-national study of textbooks carried out to date – the curriculum analysis of the 1995 Third International Mathematics and Science Study (TIMSS). This study included a detailed, page-by-page, inventory of the mathematics and science content, pedagogy, and other characteristics collected from hundreds of textbooks in over forty countries. Drawing on these data, the authors investigate the rhetorical

and pedagogical features of textbooks to understand how they promote and constrain educational opportunities. They investigate how textbooks are constructed and how they structure diverse elements into prescriptions for teaching practice. Conclusions are offered regarding the role of textbooks in curriculum-driven educational reform.

## *Histoire*

Tom M. APOSTOL, Jean-Pierre BOURGUIGNON, Michele EMMER, Hans-Christian HEGE, Konrad POLTHIER, (Editors). — **Early history of mathematics.** — Springer VideoMATH. — 1 cassette vidéo VHS/PAL. — ISBN 3-540-92647-X. — Prix: € 39.95. — Springer, Berlin, 2003.

This 30 minute video uses motion, colour, music, and images of original documents to outline some of the important developments in the early history of mathematics, from Babylonian calendars on clay tablets produced 5000 years ago, to landmark events leading to the development of calculus in the seventeenth century. It contains computer-animated demonstrations of the Pythagorean Theorem, the irrationality of the square root of two (a new geometric proof), the formula for the area of a circular disk, and the method of Archimedes for estimating the number pi.

Ioan JAMES. — **Remarkable mathematicians: from Euler to von Neumann.** — Un vol. broché, 15,5 × 23, de XIV, 433 p. — ISBN 0-521-52094-0 (relié: 0-521-81777-3). — Prix: £ 19.95 (relié: £ 50.00). — The Mathematical Association of America, distributed by Cambridge University Press, Cambridge, 2003.

Ioan James introduces and profiles sixty mathematicians from an era which saw mathematics freed from its classical origins to develop into its modern form. The characters, all born between 1700 and 1910, come from a wide range of countries, and all made an important contribution to mathematics, through their ideas, their teaching, their influence, and so on. The book is organised chronologically into ten chapters each of which contain life stories of six mathematicians. The players James has chosen to portray are sufficiently representative that their stories, when read in sequence, convey in human terms something of the way in which mathematics developed.

Alain SCHÄRLIG. — **Compter avec des jetons: tables à calculer et tables de compte du Moyen Âge à la Révolution.** — Un vol. broché, 16 × 24, de 283 p. — ISBN 2-88074-542-X. — Prix: SFr. 55.00. — Presses polytechniques et universitaires romandes, Lausanne, 2003.

Le livre s'ouvre sur une introduction en deux temps: une mise en bouche pour décrire les objets, et une très riche documentation montrant combien le jeton a été omniprésent comme moyen de calcul pendant plusieurs siècles en Europe. Il se divise ensuite en deux parties: la première est un traité complet du calcul au moyen de jetons, sur les différents supports utilisés autrefois, et la seconde est un inventaire exhaustif des supports connus à ce jour, tables à calculer et tables de compte, ainsi que tapis de compte, conservés tant des musées que chez des particuliers. Aussi clair et pédagogique que les précédents livres de l'auteur – il ne nécessite notamment pas d'aptitudes particulières en arithmétique – cet ouvrage comble un vide dans un domaine où rien de complet n'avait été publié jusqu'ici.

Michel SERFATI, (Editor). — **De la méthode: recherches en histoire et philosophie des mathématiques.** — Colloques et séminaires. — Un vol. broché, 16 × 22, de 356 p. — ISBN 2-84867-000-2. — Prix: € 22.00. — Presses universitaires Franc-Comtoises, Besançon, 2002.

Cet ouvrage rassemble dix articles d'histoire et philosophie des mathématiques, provenant de communications au séminaire d'épistémologie de l'IREM de l'Université Paris VII,