Topologie algébrique

forms that are essential for a deeper understanding of both classical and modern physics and engineering. Included are discussions of analytical and fluid dynamics, electromagnetism (in flat and curved space), thermodynamics, the deformation tensors of elasticity, soap films, special and general relativity, the Dirac operator and spinors, and gauge fields, including Yang-Mills, the Aharonov-Bohm effect, Berry phase, and instanton winding numbers.

Topologie générale

Alejandro ILLANES, Sam B. NADLER, Jr. — **Hyperspaces: fundamentals and recent advances.** — Un vol. relié, 16.5×23.5, de XVII, 512 p. — ISBN 0-8247-1982-4. — Prix: US$ 175.00. — Marcel Dekker, New York, 1999.

This book presents both solved and unsolved problems in hyperspaces - including a number that appear in print for the first time, emphasizes the hyperspaces 2^X and $\mathbf{C}(X)$, where X is a continuum, discusses symmetric products, containment hyperspaces, selections, spaces of segments, and spaces of Whitney levels... incorporates basic material on absolute retracts, infinite-dimensional topology, **Z**-sets, Peano continua, boundary bumping, and the fixed point property, offers complete details for the solution of the dimension problem, the n-od problem, the product problem, and the characteristics of Class (W), covers results on Whitney properties, Whitney-reversible properties, and their relations.

Ioan M. JAMES. — **Topologies and uniformities.** — Springer undergraduate mathematics series. — Un vol. broché, 17×23.5, de XV, 230 p. — ISBN 1-85233-061-9. — Prix: DM 56.00 — Springer, London, 1999.

This book provides the reader with a modern account of the basic concepts of topological and uniform spaces, with an emphasis on the relation between the two. The material divides naturally into three sections; six chapters on topological theory, two chapters devoted to uniform theory and the final four chapters which draw on ideas from the first two sections. Based on the author's earlier book *Topological and Uniform Spaces*, the text has been thoroughly revised and expanded.

Hervé QUEFFELEC. — **Topologie: cours et exercices corrigés.** — Enseignement des mathématiques. — Un vol. broché, 16×24, de XIII, 211 p. — ISBN 2-225-83140-8. — Prix: FF 185.00. — Masson, Paris, 1998, diffusé par Dunod, Paris et en Suisse par Havas Services Suisse, Fribourg.

Ce livre est constitué de six chapitres: nombres réels, espaces topologiques et métriques, espaces compacts, espaces connexes, espaces complets, espaces ayant localement une propriété topologique. De nombreuses figures facilitent la compréhension du texte. Chaque chapitre est suivi d'exercices corrigés et commentés en détail. Le chapitre V contient un long problème sur la dimension de Hausdorff des compacts auto-similaires.

Topologie algébrique

Hans-Joachim BAUES. — **Combinatorial foundation of homology and homotopy.** — Springer monographs in mathematics. — Un vol. relié, 16×24, de XV, 363 p. — ISBN 3-540-64984-0. — Prix: DM 159.00. — Springer, Berlin, 1999.

This book considers deep and classical results of homotopy theory like the homological Whitehead theorem, the Hurewicz theorem, the finiteness obstruction theorem of Wall, the

theorems on Whitehead torsion and simple homotopy equivalences, and characterizes axiomatically the assumptions under which such results hold. This leads to a new combinatorial foundation of homology and homotopy. Numerous explicit examples and applications in various fields of topology and algebra are given.

Topologie des variétés, analyse globale et analyse des variétés

Peter L. ANTONELLI, Bradley C. LACKEY, (Editors). — **The theory of Finslerian Laplacians and applications.** — Mathematics and its applications, vol. 459. — Un vol. relié, 16,5×24,5, de XXIX, 282 p. — ISBN 0-7923-5313-7. — Prix: Dfl. 270.00. — Kluwer Academic Publishers, Dordrecht, 1998.

The text proper begins with a brief introduction to stochastically derived Finslerian Laplacians, facilitated by applications in ecology, epidemiology and evolutionary biology. The mathematical ideas are then fully presented in section II, with generalizations to Lagrange geometry following in section III. With section IV, the focus abruptly shifts to the local mean-value approach to Finslerian Laplacians and a Hodge-de Rham theory is developed for the representation on real cohomology classes by harmonic forms on the base manifold. Similar results are proved in sections II and IV, each from different perspectives.

Bill BRUCE, David MOND, (Editors). — **Singularity theory.** — Proceedings of the European Singularities Conference, Liverpool, August 1996. — London Mathematical Society lecture note series, vol. 263. — Un vol. broché, 15,5×23, de XXIV, 440 p. — ISBN 0-521-65888-8. — Prix: £29.95. — Cambridge University Press, Cambridge, 1999.

Singularity theory is a broad subject with vague boundaries. It draws on many other areas of mathematics, and in turn has contributed to many areas both within and outside mathematics, in particular differential and algebraic geometry, knot theory, differential equations, bifurcation theory, Hamiltonian mechanics, optics, robotics and computer vision. This volume consists of two dozen articles from some of the best known figures in singularity theory, and it presents an up-to-date survey of research in this area.

William M. GOLDMAN. — **Complex hyperbolic geometry.** — Oxford mathematical monographs. — Un vol. relié, 16×24, de XX, 316 p. — ISBN 0-19-853793-X. — Prix: £65.00. — Clarendon Press, Oxford, 1999.

From the preface: This book attempts a fairly comprehensive treatment of the geometry of complex hyperbolic space and its boundary. This subject's richness is enhanced by the confluence of many fields of mathematics: Riemannian geometry, complex analysis, symplectic and contact geometry, Lie theory, harmonic analysis and ergodic theory. The boundary of complex hyperbolic geometry is spherical CR geometry or *Heisenberg geometry*... Largely motivated by applications to geometric structures, moduli spaces and discrete groups, this book does not attempt a thorough discussion of any of these topics. Nor does it attempt a thorough treatment of the analytic aspects listed above. Instead, this book is a user's guide to complex hyperbolic geometry...

Emmanuel HEBEY. — **Nonlinear analysis on manifolds: Sobolev spaces and inequalities.** — Courant lecture notes, vol. 5. — Un vol. broché, 15×22,5, de 309 p. — ISBN 0-9658703-4-0. — Prix: US$20.00. — Courant Institute of Mathematical Sciences, New York, 1999.

These notes deal with the theory of Sobolev spaces on Riemannian manifolds. The present notes are organized into nine chapters. Chapter 1 is a quick introduction to differential and