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succeeding volumes, chapters concerning significant areas of differential geometry will be published as they are completed and sent in by their authors. — *Contents*: M.A. Akivis and V.V. Goldberg: Differential geometry of webs. — D.E. Blair: Spaces of metrics and curvature functionals. — B.-Y. Chen: Riemannian submanifolds. — A. Derdzinski: Einstein metrics in dimension four. — P.B. Gilkey: The Atiyah-Singer index theorem. — C.S. Gordon: Survey of isospectral manifolds. — Ü. Lumiste: Submanifolds with parallel fundamental form. — K. Shiohama: Sphere theorems. — U. Simon: Affine differential geometry. — G. Thorbergsson: A survey on isoparametric hypersurfaces and their generalizations. — T. Willmore: Curves.

Misha GROMOV. — **Metric structures for Riemannian and non-Riemannian spaces.** — Based on *Structures métriques des variétés riemanniennes*. — With appendices by M. Katz, P. Pansu, and S. Semmes. — Edited by J. LaFontaine and P. Pansu. — English translation by Sean Michael Bates. — Progress in mathematics, vol. 152. — Un vol. relié, 16,5×24, de XIX, 585 p. — ISBN 0-8176-3998-9. — Prix: SFr. 168.00. — Birkhäuser, Boston, 1999.

The boundary of metric theory, which covers a domain between the fields of topology and global Riemannian geometry, has dramatically exploded in the last 20 years, in part due to the important research of one of the world's leading geometers, M. Gromov. This book is based on an earlier French work (1979) which has been substantially revised and expanded. Exciting new connections between geometry and probability theory are made and links to analysis are developed. Key ideas of real analysis are presented in an accessible way to geometers. This self-contained monograph may be used in seminars and topics courses. Numerous illustrations and examples, bibliography and index, accompany a well-written text, which is an excellent self-study resource for geometers, analysts, and probabilists.

## ***Topologie algébrique***

Paul G. GOERSS, John F. JARDINE. — **Simplicial homotopy theory.** — Progress in mathematics, vol. 174. — Un vol. relié, 16,5×23,5, de xv, 510 p. — ISBN 3-7643-6064-X. — Prix: SFr. 98.00. — Birkhäuser, Basel, 1999.

With the development of Quillen's concept of a closed model category and in particular, a simplicial model category, the collection of simplicial methods has become the primary way to describe non-abelian homological algebra and to address homotopy-theoretical issues in a variety of fields, including algebraic  $K$ -theory. This book supplies a modern exposition of these ideas, emphasizing model category theoretical techniques. Discussed here are the homotopy theory of simplicial sets, and other basic topics such as simplicial groups, Postnikov towers, and bisimplicial sets. The more advanced material includes homotopy limits and colimits, localization with respect to a map and with respect to a homology theory, cosimplicial spaces, and homotopy coherence. Interspersed throughout are many results and ideas well-known to experts, but uncollected in the literature.

Sibe MARDEŠIĆ. — **Strong shape and homology.** — Springer monographs in mathematics. — Un vol. relié, 17×24, de XII, 489 p. — ISBN 3-540-66198-0. — Prix: DM 159.00. — Springer, Berlin, 2000.

Shape theory is an extension of homotopy theory from the realm of CW-complexes to arbitrary spaces. Besides applications in topology, it has interesting applications in various other areas of mathematics, especially in dynamical systems and  $C^*$ -algebras. Strong shape is a refinement of ordinary shape with distinct advantages over the latter. Strong homology generalizes Steenrod homology and is an invariant of strong shape. The book gives a detailed account

based on approximation of spaces by polyhedra (ANRs) using the technique of inverse systems. It is intended for researchers and graduate students. Special care is devoted to motivation and bibliographic notes.

### ***Topologie des variétés, analyse globale et analyse des variétés***

Michèle AUDIN. — **Spinning tops: a course on integrable systems.** — Cambridge studies in advanced mathematics, vol. 51. — Un vol. broché, 15,5×23, de viii, 139 p. — ISBN 0-521-77919-7. — Prix: £15.95. — Cambridge University Press, Cambridge, 1999.

Since the time of Lagrange and Euler, it has been well known that an understanding of algebraic curves can illuminate the picture of rigid bodies provided by classical mechanics. A modern view of the role played by algebraic geometry has been established in recent years by many mathematicians. This book presents some of these modern techniques, which fall within the orbit of finite-dimensional integrable systems. The main body of the text presents a rich assortment of methods and ideas from algebraic geometry prompted by classical mechanics, whilst in appendices the general, abstract theory is described. The methods are given a topological application, for the first time in book form, to the study of Liouville tori and their bifurcations.

Károly BÖRÖCZKY, Jr., Walter NEUMANN, András STIPSICZ, (Editors). — **Low dimensional topology.** — Bolyai Society Mathematical Studies, vol. 8. — Un vol. relié, 17,5×24,5, de 413 p. — ISBN 963-8022-92-2. — János Bolyai Mathematical Society, Budapest, 1999.

This proceedings contains the notes of five lecture series delivered at the Summer School on Low Dimensional Topology, held August 3-14, 1998 in Budapest (Hungary), and at the EMS Summer Schools No. 1, Algebraic Geometry, held in 1996 in Eger (Hungary). *Contents:* M. Davis, G. Moussong: Notes on nonpositively curved polyhedra. — J.W. Morgan: Smooth invariants of 4-manifolds. — W.E. Neumann: Notes on geometry and 3-manifolds. — A. Némethi: Normal surface singularities. — A. Némethi: Some topological invariants of isolated hypersurface singularities.

Brian DAVIES, Yuri SAFAROV, (Editors). — **Spectral theory and geometry.** — ICMS Instructional Conference, Edinburgh 1998. — London Mathematical Society lecture note series, vol. 273. — Un vol. broché, 15,5×23, de xii, 328 p. — ISBN 0-521-77749-6. — Prix: £27.95. — Cambridge University Press, Cambridge, 1999.

This volume brings together lectures from an instructional meeting on spectral theory and geometry held under the auspices of the International Centre for Mathematical Sciences in Edinburgh. The contributions here come from world experts and many are much expanded versions of the lectures they gave; together they survey the core material and go beyond to describe deeper results. For graduate students and experts alike, this book will be a highly useful resource.

Tan LEI, (Editor). — **The Mandelbrot set, theme and variations.** — London Mathematical Society lecture note series, vol. 274. — Un vol. broché, 15×23, de xx, 365 p. — ISBN 0-521-77476-4. — Prix: £27.95. — Cambridge University Press, Cambridge, 2000.

This volume provides a systematic exposition of current knowledge about the Mandelbrot set and presents the latest research in complex dynamics. Topics discussed include the universality and the local connectivity of the Mandelbrot set, parabolic bifurcation, critical circle homeomorphisms, absolutely continuous invariant measures and matings of polynomials,