

Topologie algébrique

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John M. LEE. — **Introduction to smooth manifolds.** — Graduate texts in mathematics, vol. 218. — Un vol. broché, $15,5 \times 23,5$, de xvii, 628 p. — ISBN 0-387-95448-1. — Prix: € 54.95. — Springer, New York, 2003.

The goal of this book is to familiarize students with the tools they will need in order to use manifolds in mathematical or scientific research — smooth structures, tangent vectors and covectors, vector bundles, immersed and embedded submanifolds, tensors, differential forms, de Rham cohomology, vector fields, flows, foliations, Lie derivatives, Lie groups, Lie algebras, and more. The approach is as concrete as possible. Along the way, it introduces the readers to some of the most important examples of geometric structures that manifolds can carry, such as Riemannian metrics, symplectic structures, and foliations. The book is aimed at students who already have a solid acquaintance with general topology, the fundamental group, and covering spaces, as well as basic undergraduate linear algebra and real analysis.

Topologie algébrique

Marcelo AGUILAR, Samuel GITLER, Carlos PRIETO. — **Algebraic topology from a homotopical viewpoint.** — Universitext. — Un vol. relié, 24×16 , de xxix, 478 p. — ISBN 0-387-95450-3. — Prix: SFr. 133.00. — Springer, Berlin, 2002.

The purpose of this book is to introduce algebraic topology using the novel approach of homotopy theory, an approach with clear applications in algebraic geometry as understood by Lawson and Voevodsky. This method allows the authors to cover the material more efficiently than the more common method using homological algebra. The basic concepts of homotopy theory, such as fibrations and cofibrations, are used to construct singular homology and cohomology, as well as K -theory. Throughout the text many other fundamental concepts are introduced, including the construction of the characteristic classes of vector bundles. Although functors appear constantly throughout the book, no previous knowledge about category theory is expected from the reader.

Topologie des variétés, analyse globale et analyse des variétés

Jan CNOPS. — **An introduction to Dirac operators on manifolds.** — Progress in mathematical physics, vol. 24. — Un vol. relié, 16×24 , de x, 211 p. — ISBN 0-8176-4298-6. — Prix: SFr. 116.00. — Birkhäuser, Boston, 2002.

In this essentially self-contained work, the basic ideas underlying the concept of Dirac operators are explored. Starting with Clifford algebras and the fundamentals of differential geometry, the text focuses on two main properties, namely, conformal invariance, which determines the local behavior of the operator, and the unique continuation property dominating its global behavior. Spin groups and spinor bundles are covered, as well as the relations with their classical counterparts, orthogonal groups and Clifford bundles. The reader will benefit, however, from some knowledge of complex analysis, which gives the simplest example of a Dirac operator. More advanced readers will appreciate the fresh approach to the theory as well as the new results on boundary value theory.

Frédéric HÉLEIN. — **Harmonic maps, conservation laws and moving frames.** — Second edition. — Cambridge tracts in mathematics, vol. 150. — Un vol. relié, 16×23 , de xxi, 264 p. — ISBN 0-521-81160-0. — Prix: £47.50. — Cambridge University Press, Cambridge, 2002.

This book provides an accessible and self-contained introduction to harmonic map theory and its analytical aspects, covering recent developments in the regularity theory of weakly harmonic maps. The book begins by introducing these concepts, stressing the interplay between geometry, the role of symmetries and weak solutions. The reader is then presented with a guided