Zeitschrift: L'Enseignement Mathématique
Herausgeber: Commission Internationale de l'Enseignement Mathématique
Band: 49 (2003)
Heft: 3-4: L'ENSEIGNEMENT MATHÉMATIQUE

Kapitel: Statistique

detailed presentation of the main classical theorems in the theory of foliations, then proceeds to Molino's theory, foliation, and finally Lie algebroids. Among other things, the authors discuss to what extent Lie's theory for Lie groups and Lie algebras holds in the more general context of groupoids and algebroids. Based on the authors' extensive teaching experience, this book contains numerous examples and exercises making it ideal for graduate students and their instructors.

David MOND, Marcelo José SAIA, (Editors). — **Real and complex singularities**. — Lecture notes in pure and applied mathematics, vol. 232. — Un vol. broché, 18×25,5, de VIII, 326 p. — ISBN 0-8247-4091-2. — Prix: US$175.00. — Marcel Dekker, New York, 2003.

Offering a selection of invited papers on singularity theory presented at the Sixth Workshop on Real and Complex Singularities held at Instituto de Ciências Matemáticas e de Computação-USP, São Carlos, São Paulo, Brazil, this reference discusses the most recent results and applications of singularity theory to related areas such as algebraic geometry, quantum cohomology, geometry, and dynamical systems. This book contains papers on Frobenius manifolds and the construction of global moduli spaces for isolated hypersurface singularities... global topological invariants of stable maps from a surface to the plane... indices of Newton nondegenerate vector fields and a conjecture of Loewner for surfaces in $\mathbf{R}^4$ ... transversal Whitney topology and singularities of Haefliger foliations... and deformations of boundary singularities and noncrystallographic Coxeter groups.

Probabilités et processus stochastiques

Bernt ØKSENDAL. — **Stochastic differential equations: an introduction with applications.** — Sixth edition. — Universitext. — Un vol. broché, 15,5×23,5 de XXIII, 360 p. — ISBN 3-540-04758-1. — Prix: €34.95. — Springer, Berlin, 2003.

For the sixth edition the author has added further exercises and, for the first time, solutions to many of the exercises are provided. — *Contents:* Introduction. — Some mathematical preliminaries. — Itô integrals. — The Itô formula and the martingale representation theorem. — Stochastic differential equations. — The filtering problem. — Diffusions: basic properties. — Other topics in diffusion theory. — Applications to boundary value problems. — Application to optimal stopping. — Application to stochastic control. — Application to mathematical finance. — Normal random variables. — Conditional expectation. — Uniform integrability and martingale convergence. — An approximation result. — Solutions and additional hints to some of the exercises. — References.

Statistique

Jim ALBERT, Jay BENNETT. — **Curve Ball: baseball, statistics, and the role of chance in the game.** — Revised edition. — Un vol. broché, 15,5×23,5, de XXII, 410 p. — ISBN 0-387-00193-X. — Prix: €22.95. — Copernicus Books, an imprint of Springer-Verlag, New York, 2003.

We're surrounded – some might say inundated – by baseball statistics. We find them in newspapers and magazines, in books and on the back of baseball cards, and on TV, radio, and the Internet. The question is, can fans – or anyone – make sense of this proliferating data? Authors Jim Albert and Jay Bennett believe we all can, given just a slightly more sophisticated approach to statistics. In this revised and updated paperback edition, the authors take a fresh look at time-

honored stats, introduce some new measures of performance, and delve into the all-important role of chance in the game. Whether they're analyzing Barry Bonds or the extraordinary drama of the 2002 World Series, they show us how statistics can enhance not just our understanding, but our appreciation of the game.

Analyse numérique

Heinrich FREISTÜHLER, Gerald WARNECKE, (Editors). — **Hyperbolic problems: theory, numerics, applications: Eighth International Conference in Magdeburg, February/March 2000**. — International series of numerical mathematics, vol. 140 et 141. — Deux vol. reliés, 17×24, de 972 p. au total. — ISBN 3-7643-6709-1 et 3-7643-6710-5. — Prix: l'ensemble des volumes, SFr. 198.00. — Birkhäuser, Basel, 2003.

Hyperbolic partial differential equations describe phenomena of material or wave transport in physics, biology and engineering, especially in the field of fluid mechanics. The mathematical theory of hyperbolic equations has recently made considerable progress. Accurate and efficient numerical schemes for computation have been and are being further developed. This two-volume set of conference proceedings contains about 100 refereed and carefully selected papers. The books are intended for researchers and graduate students in mathematics, science and engineering interested in the most recent results in theory and practice of hyperbolic problems. Applications touched in these proceedings concern one-phase and multiphase fluid flow, phase transitions, shallow water dynamics, elasticity, extended thermodynamics, electromagnetism, classical and relativistic magnetohydrodynamics, cosmology. Contributions to the abstract theory of hyperbolic systems deal with viscous and relaxation approximations, front tracking and wellposedness, stability of shock profiles and multi-shock patterns, traveling fronts for transport equations. Numerically oriented articles study finite difference, finite volume, and finite element schemes, adaptive, multiresolution, and artificial dissipation methods.

R. GLOWINSKI, (Author), P.G. CIARLET, J.L. LIONS, (Editors). — **Handbook of numerical analysis, vol. 9: Numerical methods for fluids (part 3).**— Un vol. relié, 17×25, de x, 1176 p. — ISBN 0-444-51224-1. — Prix: € 190.00. — Elsevier, Amsterdam, 2003.

This book is dedicated to the numerical simulation of unsteady incompressible viscous flow modelled by the Navier-Stokes equations, or by non-Newtonian variants of them. In order to achieve this goal, the author has developed a methodology based on the following tools: (1) Time discretization by operator splitting schemes such as Peaceman-Rachford's, Douglas-Rachford's, Marchuk-Yanenko's, Strang's symmetrized, and the so-called theta–scheme introduced by the author in the mid-eighties. (2) Projection methods (in L2 or H1) for the treatment of the incompressibility condition div $\mathbf{u} = 0$. (3) Treatment of the advection by either a centered scheme leading to linear or nonlinear advection-diffusion problems solved by least squares/conjugate gradient algorithms, or to a linear wave-like equation well suited to finite element based solution methods. (4) Space approximation by finite element methods such as Hood-Taylor and Bercovier-Pironneau, which are relatively easy to implement. In addition to the above topics the text contains detailed discussions of conjugate gradient algorithms, least-squares methods for boundary value problems which are not equivalent to problems of the calculus of variations, Uzawa-type algorithms for the solution of saddle-point problems, embedding/fictitious domain methods for the solution of elliptic and parabolic problems. In fact many computational methods discussed apply also to non-CFD problems although they were mostly designed for the solution of flow problems.