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Analyse numérique

Olaf STEINBACH. — **Stability estimates for hybrid coupled domain decomposition methods.** — Un vol. broché, 15,5×23,5, de vi, 120 p. — ISBN 3-540-00277-4. — Prix: €22.95. — Springer, Berlin, 2003.

Domain decomposition methods are a well established tool for an efficient numerical solution of partial differential equations, in particular for the coupling of different model equations and of different discretization methods. Based on the approximate solution of local boundary value problems either by finite or boundary element methods, the global problem is reduced to an operator equation on the skeleton of the domain decomposition. Different variational formulations then lead to hybrid domain decomposition methods.

Henk A. VAN DER VORST. — **Iterative Krylov methods for large linear systems.** — Cambridge monographs on applied and computational mathematics. — Un vol. relié, 15,5×23,5, de xiii, 283 p. — ISBN 0-521-81828-1. — Prix: £37.50. — Cambridge University Press, Cambridge, 2003.

Computational simulations of scientific phenomena and engineering problems often depend on solving linear systems with a large number of unknowns. This book gives insight into the construction of iterative methods for the solution of such systems and helps the reader to select the best solver for a given class of problems. The emphasis is on the main ideas and how they have led to efficient solvers such as CG, GMRES, and Bi-CGSTAB. The book also explains the main concepts behind the construction of preconditioners. The reader is encouraged to gain experience by analysing numerous examples that illustrate how best to exploit the methods. The book also hints at many open problems and as such will appeal to established researchers. There are many exercises that motivate the material and help students to understand the essential steps in the analysis and construction of algorithms.

Informatique

André HECK. — **Introduction to Maple.** — Third edition — Un vol. relié, 16×24, de xvi, 828 p. — ISBN 0-387-00230-8. — Prix: €49.95. — Springer, New York, 2003.

This is a fully revised edition of the best-selling *Introduction to Maple*. The book presents the modern computer algebra system Maple, teaching the reader not only what can be done by Maple, but also how and why it can be done. The book also provides the necessary background for those who want the most of Maple or want to extend its built-in knowledge. Emphasis is on understanding the Maple system more than on factual knowledge of built-in possibilities. To this end, the book contains both elementary and more sophisticated examples as well as many exercises. The typical reader should have a background in mathematics at the intermediate level.

Herbert S. WILF. — **Algorithms and complexity.** — Second edition. — Un vol. relié, 16×24, de ix, 219 p. — ISBN 1-56882-178-0. — Prix: US\$39.00. — A.K. Peters, Natick, Massachusetts, 2002.

Updated and back in print, this classic text provides the perfect introduction to the tools of algorithmic design and analysis, concentrating on basic principles and illustrating them with well-chosen paradigm such as: fast Fourier transform, NP-completeness, number theory