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reachable sets; furnishes the most recent problems, including feedback stabilization, classification, and invariants; covers the optimality of trajectories using the Maslov index; delineates the role of singularity theory in stability theory and feedback equivalence; explores singularities of systems, reachable sets, and stabilizing and optical controls... and more.

Athanasios MIGDALAS, Panos M. PARDALOS, Peter VÄRBRAND, (Editors). — **Multilevel optimization: algorithms and applications.** — Nonconvex optimization and its applications, vol. 20. — Un vol. relié, 16×24,5, de XII, 384 p. — ISBN 0-7923-4693-9. — Prix: Dfl. 320.00. — Kluwer Academic Publishers, Dordrecht, 1998.

The field of multilevel optimization has become a well-known and important research field. Hierarchical structures can be found in scientific disciplines such as environment, ecology, biology, chemical engineering, mechanics, classification theory, databases, network design, transportation, game theory and economics. Moreover, new applications are constantly being introduced. This has stimulated the development of a new theory and efficient algorithms. This volume contains 16 chapters written by various researchers and presents a cohesive authoritative overview of developments and applications in this emerging field of optimization.

Teng-Tiow TAY, Iven MAREELS, John B. MOORE. — **High performance control.** — Systems & control. — Un vol. relié, 16×24, de XVI, 344 p. — ISBN 0-8176-4004-5 (Boston), 3-7643-4404-5 (Basel, pbk). — Prix: SFr. 148.00. — Birkhäuser, Boston,1998.

High performance control deals with guaranteed stability and performance properties in systems that are subject to a variety of uncertainties and external disturbances. It is of particular importance in engineering applications where undesirable physical properties or operating characteristics of the system, such as vibration, noise, and process variations must be overcome to insure proper working of the system. The authors use the tools of optimal control, robust control, and adaptive control to develop the theory and practice of high performance control in a real world environment.

Hoang TUY. — **Convex analysis and global optimization.** — Nonconvex optimization and its applications, vol. 22. — Un vol. relié, 16,5×24,5, de XI, 339 p. — ISBN 0-7923-4818-4. — Prix: Dfl. 240.00. — Kluwer Academic Publishers, Dordrecht, 1998.

Convex analysis plays an essential rôle in the development of global optimization methods. This book develops a coherent and rigorous theory of deterministic global optimization from this point of view. Part I constitutes an introduction to convex analysis, with an emphasis on concepts, properties and results particularly needed for global optimization, including those pertaining to the complementary convex structure. Part II presents the foundations and application of global search principles such as partitioning and cutting, outer and inner approximation, decomposition, to general global optimization problems and to problems with a low rank nonconvex structure as well as quadratic problems.

Information, communication, circuits

John BAYLIS. — **Error-correcting codes: a mathematical introduction.** — Chapman & Hall mathematics series. — Un vol. broché, 16×23,5, de XII, 219 p. — ISBN 0-412-78690-7. — Prix: £24.99. — Chapman & Hall, London, 1998.

Topics covered in the book include optimal codes, linear and non-linear codes, general techniques of decoding errors and erasures, error detection, syndrome decoding, cyclic codes, and Hamming, Golay and Reed-Muller codes. It contains not only straight maths, but also

exercises on more investigational problem solving. Chapters on number theory and polynomial algebra are included to support linear codes and cyclic codes, and an extensive reminder of relevant topics in linear algebra is given.

Oliver PRETZEL. — **Codes and algebraic curves.** — Oxford lecture series in mathematics and its applications, vol. 8. — Un vol. relié, 16,5 × 24, de XII, 192 p. — ISBN 0-19-850039-4. — Prix : £35.00. — Clarendon Press, Oxford,1998.

This book is an updated and extended version of the last part of the successful book *Error-correcting codes and finite fields*. It provides an elementary introduction to Goppa codes, and includes many examples, calculations, and applications. The book is in two parts with an emphasis on motivation, and applications of the theory take precedence over proofs of theorems. The formal theory is, however, provided in the second part of the book, and several of the concepts and proofs have been simplified without sacrificing rigour.