Zeitschrift: L'Enseignement Mathématique
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Kapitel: Equations différentielles ordinaires

Fonctions spéciales

Adhemar BULTHEEL, Pablo GONZALEZ-VERA, Erik HENDRIKSEN, Olav NJASTAD. — **Orthogonal rational functions.** — Cambridge monographs on applied and computational mathematics, vol. 5. — Un vol. relié, 15,5×23,5, de XIV, 403 p. — ISBN 0-521-65006-2. — Prix: £37.50. — Cambridge University Press, Cambridge, 1999.

This book generalizes the classical theory of orthogonal polynomials on the complex unit circle or on the real line to orthogonal rational functions whose poles are among a prescribed set of complex numbers. The first part treats the case where these poles are all outside the unit disk or in the lower half plane. Classical topics such as recurrence relations, numerical quadrature, interpolation properties, Favard theorems, convergence, asymptotics, and moment problems are generalized and treated in detail. The same topics are discussed for the different situation where the poles are located on the unit circle or on the extended real line. In the last chapter, several applications are mentioned including linear prediction, Pisarenko modeling, lossless inverse scattering, and network synthesis.

P.A. DEIFT. — **Orthogonal polynomials and random matrices: a Riemann-Hilbert approach.** — Courant lecture notes in mathematics, vol. 3. — Un vol. broché, 15×22,5, de 273 p. — ISBN 0-9658703-2-4. — Prix: US$20.00. — Courant Institute of Mathematical Sciences, New York, 1999.

Riemann-Hilbert problems. — Jacobi operators. — Orthogonal polynomials. — Continued fractions. — Random matrix theory. — Equilibrium measures. — Asymptotics for orthogonal polynomials. — Universality.

Equations différentielles ordinaires

D.W. JORDAN, P. SMITH. — **Nonlinear ordinary differential equations: an introduction to dynamical systems.** — Third edition. — Oxford applied and engineering mathematics, vol. 2. Un vol. broché, 15,5×23,5, de X, 550 p. — ISBN 0-19-856562-3. — Prix: £21.95. — Oxford University Press, Oxford, 1999.

The text of this third edition has been completely revised to bring it into line with current interest and research in the subject, including an expansion of the material on bifurcation and chaos. The book is directed towards practical application of the theory, with several hundred examples and problems covering a wide variety of applications. Prerequisites are kept to a minimum. Further topics covered include phase plane analysis, nonlinear damping, small parameter expansions and singular perturbations, subharmonic responses, stability, Liapunov methods, existence theory of limit cycles, Poincaré sequences and homoclinic bifurcation.

Equations aux dérivées partielles

Heinrich G.W. BEGEHR, Robert P. GILBERT, Guo-Chen WEN, (Editors). — **Partial differential and integral equations.** — International Society for Analysis, Applications and Computation, vol. 2. — Un vol. relié, 17×24,5, de X, 369 p. — ISBN 0-7923-5482-6. — Prix: Dfl. 280.00. — Kluwer Academic Publishers, Dordrecht, 1999.

Recent results on partial differential equations as well as with complex analytic methods, on singular integral equations and on related subjects are presented. Many of the contributions are survey articles. Topics ranging from elliptic, parabolic, hyperbolic, mixed-type equations and