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Kapitel: Equations aux dérivées partielles

certain growth conditions, is the description of the regions of approach to the boundary, along which the functions converge almost everywhere to their boundary values. This fundamental chapter of analysis was reopened in 1984 by A. Nagel and E.M. Stein, with the discovery of approach regions of convergence that are larger than the natural approach regions. This monograph provides an introduction, as well as an exposition of the latest results in an active area of research

Equations aux dérivées partielles

Ferruccio COLOMBINI, Nicolas LERNER. — **Geometrical optics and related topics.** — Progress in nonlinear differential equations and their applications, vol. 32. — Un vol. relié, 16,5×24,5 de VI, 361 p. — ISBN 0-8176-3958-6. — Prix: SFr. 138.00. — Birkhäuser, Boston, 1997.

This volume contains 14 research papers which are expanded versions of conferences given at a meeting held in Cortona, Italy in the fall of 1996. The topics include blowup questions for quasilinear equations in 2–d, time decay of waves in L^p, uniqueness results for systems of conservation laws in 1–d, concentration effects for critical nonlinear wave equations, diffraction of nonlinear waves, propagation of singularities in scattering theory, and caustics for semilinear oscillations. Other topics linked to microlocal analysis are Sobolev spaces in Weyl-Hörmander calculus, local solvability for pseudodifferential equations, and hypoellipticity for highly degenerate operators.

Michael DEMUTH, Bert-Wolfgang SCHULZE, (Editors). — **Differential equations, asymptotic analysis, and mathematical physics.** — Mathematical research, vol. 100. — Un vol. relié, 18,5×24, de 424 p. — ISBN 3-05-501769-2. — Prix: DM 148.00. — Akademie Verlag, Berlin, 1997.

This volume contains a collection of original papers, associated with the International Conference on Partial Differential Equations, held in Potsdam, July 29 to August 2, 1996. This event is connected with the activities of the Max Planck Research Group for Partial Differential Equations at Potsdam. The main topics concern recent progress in partial differential equations, microlocal analysis, pseudo-differential operators on manifolds with singularities, aspects of differential geometry and index theory, operator theory and operators algebras, stochastic spectral analysis, semigroups, Dirichlet forms, Schrödinger operators, semiclassical analysis, and scattering theory.

Michael DEMUTH, Elmar SCHROHE, Bert-Wolfgang SCHULZE, Johannes SJÖSTRAND, (Editors). — **Spectral theory, microlocal analysis, singular manifolds.** — Mathematical topics, vol. 14. — Advances in partial differential equations. — Un vol. relié, 18×24,5, de 366 p. — ISBN 3-05-501776-5. — Prix: DM 148.00. — Akademie Verlag, Berlin, Wiley-VCH, Weinheim 1997.

The first contribution addresses domain perturbations for generalized Schrödinger operators and the influence of the capacity on spectral data. The next topic is the scattering of weakly interacting solitons for nonlinear Schrödinger equations. There follows an article discussing the minimal smoothness assumptions on the domain under which the asymptotics of the counting function for the eigenvalues of elliptic boundary value problems can be determined. Fourier integral operators with degenerate phase function are studied. Further articles are devoted to the regularity and asymptotics of solutions to partial differential equations on singular manifolds.

V.A. KOZLOV, V.G. MAZ'YA, J. ROSSMANN. — **Elliptic boundary value problems in domains with point singularities.** — Mathematical surveys and monographs, vol. 52. — Un vol. relié, 18,5×26, de IX, 414 p. — ISBN 0-8218-0754-4. — Prix: £70.00. — American Mathematical Society, Providence, distributed by Oxford University Press, Oxford, 1998.

This monograph systematically treats a theory of elliptic boundary value problems in domains without singularities and in domains with conical or cuspidal points. This exposition is self-contained and a priori requires only basic knowledge of functional analysis. Restricting to boundary value problems formed by differential operators and avoiding the use of pseudo-differential operators makes the book accessible for a wider readership. The authors concentrate on fundamental results of the theory. A special feature of the book is that the solutions of the boundary value problems are considered in Sobolev spaces of both positive and negative orders.

Maria MASCARELLO, Luigi RODINO. — **Partial differential equations with multiple characteristics.** — Mathematical topics, vol. 13. — Un vol. relié, 17,5×24,5, de 352 p. — ISBN 3-05-501764-1. — Prix: DM 148.00. — Akademie Verlag, Berlin, Wiley-VCH, Weinheim, 1997.

The book is devoted to the general theory of partial differential equations with multiple characteristics. The method of microlocal analysis are reviewed and used to prove recent results on local solvability, hypoellipticity, propagation of singularities in the frame of Sobolev spaces, Schwartz distributions, and Gevrey ultradistributions. The Cauchy problem is also considered.

Peter R. POPIVANOV, Dian K. PALAGACHEV. — **The degenerate oblique derivative problem for elliptic and parabolic equations.** — Mathematical research, vol. 93. — Un vol. broché, 17×24, de 153 p. — ISBN 3-05-501757-9. — Prix: DM 78.00. — Akademie Verlag, Berlin, 1997.

The authors investigate the degenerate (tangential) oblique derivative problem for linear and semilinear second order elliptic and parabolic operators. They propose at first a survey on the linear degenerate oblique derivative problem including central results on the subject, as well as subelliptic estimates in Sobolev and Hölder classes. Theorems on existence, uniqueness and regularity of the classical solutions to the tangential oblique derivative problem for semilinear elliptic and parabolic equations are proved more detailed.

Karen YAGDJIAN. — **The Cauchy problem for hyperbolic operators: multiple characteristics; micro-local approach.** — Mathematical topics, vol. 12. — Un vol. relié, 18×24,5, de 397 p. — ISBN 3-05-501739-0. — Prix: DM 130.00. — Akademie Verlag, Berlin, 1997.

The goal of this book is a construction of the fundamental solution to the Cauchy problem for hyperbolic operators with multiple characteristics. Well-posedness of the problem in various functional spaces as well as a propagation of singularities of the solutions are investigated, too. For operators with multiple characteristics so called Levi conditions play a crucial rôle. Described in the book Levi conditions allow to carry out the construction of fundamental solutions. The approach represented in the book is essentially based on the zeros of the complete symbol of the operator.

Analyse de Fourier, analyse harmonique abstraite

C.E. D'ATTELLIS, E.M. FERNÁNDEZ-BERDAGUER. — **Wavelet theory and harmonic analysis in applied sciences.** — Applied and numerical harmonic analysis. — Un vol. relié, 16,5×24, de XVIII, 345 p. — ISBN 0-8176-3953-5. — Prix: SFr. 138.00. — Birkhäuser, Boston, 1997.

This book contains 12 invited chapters addressing applications and interactions between wavelet theory and scientific, medical and geophysical problems. Topics covered include EGG