Contents

In: Jaromír Vosmanský and Miloš Zlámal (eds.): Equadiff 6, Proceedings of the International Conference on Differential Equations and Their Applications held in Brno, Czechoslovakia, Aug. 26 - 30, 1985. J. E. Purkyně University, Department of Mathematics, Brno, 1986.
pp. V--VII.

Persistent URL: http://dml.cz/dmlcz/700185

Terms of use:

© Masaryk University, 1986

Institute of Mathematics of the Academy of Sciences of the Czech Republic provides access to digitized documents strictly for personal use. Each copy of any part of this document must contain these *Terms of use*.

This paper has been digitized, optimized for electronic delivery and stamped with digital signature within the project *DML-CZ: The Czech Digital Mathematics Library* http://project.dml.cz

CONTENTS

PREFACE III
LIST OF PAPERS PRESENTED AT THE CONFERENCE IX
LIST OF PARTICIPANTS XVII

PLENARY LECTURES:

FEISTAUER M.: Critical point theory and nonlinear differential equations 3
FRIEDMAN A.: Free boundary problems in fluid dynamics 17
KAČUR J.: Method of Rothe in evolution equations 23
KUFNER A.: Boundary value problems in weighted spaces 35
MAWHIN J.: Critical point theory and nonlinear differential equations 49
NEUMAN F.: Ordinary linear differential equations — a survey of the global theory 59
REKTORYS K.: Numerical and theoretical treating of evolution problems by the method of discretization in time 71
STETTER H. J.: Algorithms for the inclusion of solutions of ordinary initial value problems 85
TRIEBEL H.: Recent developments in the theory of function spaces 95

LECTURES PRESENTED IN SECTIONS:

A. *Ordinary differential equations:*

BARTUŠEK M.: On properties of oscillatory solutions of nonlinear differential equations 109
BURTON T. A., DWIGGINS D. P.: Uniqueness without continuous dependence 115
FIEDLER B., BRUNOVSKÝ P.: Connections in scalar reaction diffusion equations with Neumann boundary conditions 123
GREGUŠ M.: On a certain boundary value problem of the third order 129
KRBEC P.: On nonparasite solutions 133
KREITH K.: Uniform zeros for beaded strings 141
KURZWEIL J., JARNÍK J.: Perron integral, Perron product integral and ordinary linear differential equations 149
MULDOON M. E.: On the zeros of some special functions: differential equations and Nicholson-type formulas 155
ŠEDA V.: Surjectivity and boundary value problems 161

ŠVEC M.: Some problems concerning the equivalences of two systems of differential equations 171
TRENCH W. F.: Linear perturbations of general disconjugate equations 181
TVRDÝ M.: On optimal control of systems with interface side conditions 187

B. *Partial differential equations*

BEBERNES J. W.: A description of blow-up for the solid fuel ignition model 193
BRILLA J.: Spectral analysis of non-self-adjoint elliptic operators 197
CHANG K. Ch.: On the mountain pass lemma 203
GAJEWSKI H.: On uniqueness and stability of steady-state carrier distributions in semiconductors 209
GIAQUINTA M.: Partial regularity of minimizers 215
KREJČÍ P.: Periodic solutions of partial differential equations with hysteresis 221
KUČERA M.: Stability and bifurcation problems for reaction-diffusion systems with unilateral conditions 227
MAZ'YA V. G.: Boundary integral equations of elasticity in domains with piecewise smooth boundaries 235
SIMADER C. G.: Higher regularity of weak solutions of strongly nonlinear elliptic equations 243
STARÁ J., JOHN O.: Some regularity results for quasilinear parabolic systems 247
TRUDINGER N. S.: Classical boundary value problems for Monge-Ampere type equations 251
VALLI A.: Qualitative properties of the solutions to the Navier-Stokes equations for compressible fluides 259

C. *Numerical methods*

AGARWAL R.: On Gel'fand's method of chasing for solving multipoint boundary value problems 267
AXELSSON O.: Stability and error estimates valid for infinite time, for strongly monotone and infinitely stiff evolution equations 275
BREZZI F.: Recent results in the approximation of free boundaries 285
ČERMÁK L., ZLÁMAL M.: Finite element solution of a nonlinear diffusion problem with a moving boundary 291
DESCLOUX J., FERRO R.: Analysis of Thacker's method for solving the linearized shallow water equations 295
GOERISCH F., ALBRECHT J.: The convergence of a new method for calculating lower bounds to eigenvalues 303
JANOVSKÝ V., MAREK I., NEUBERG J.: Bifurcation analysis of stimulated Brillouin scaterring 309
KŘÍŽEK M.: Superconvergence results for linear triangular elements 315
NEDELEC J. C.: Mixed finite element in 3D in H(div) and H(curl) 321
NITSCHE J. A.: Free boundary problems for Stokes' flows 327
SCHMIDT J. W.: Enclosing methods for perturbed boundary value problems in nonlinear difference equations 333

THOMÉE V.: Error estimates for finite element methods for semilinear parabolic problems with nonsmooth data 339
WHITEMAN J. R.: Singularities in two- and three-dimensional elliptic problems and finite element methods for their treatment 345
ŽENÍŠEK A.: Some new convergence results in finite element theories for elliptic problems 353

D. *Applications*

BOLEK P., FOŘT J., KOZEL K., POLÁŠEK J.: Mathematical solution of direct and inverse problem 361
COLLATZ L.: Einige Anwendungen der Mehrdimensionalen Apprixi-mationstheorie zur Lösungseinschließung bei Randwertaufgaben 367
KODNÁR R.: A posteriori estimations of approximate solutions for some types of boundary value problem 373
KUBÍČEK M., HOLODNIOK M.: Nonlinear dynamic systems — bifurcations, continuation methods, periodic solutions 379
MARTENSEN E.: The rothe method for nonlinear hyperbolic problems 387
MEISTER E.: Some solved and unsolved canonical problems of diffraction theory 393
NEČAS J.: Entropy compactification of the transonic flow 399
NEUSTUPA J.: The global existence of weak solutions of the mollified system of equations of motion of viscous compressible fluid 409
SADOVSKÝ Z.: Bifurcations near a double eigenvalue of the rectangular plate problem with a domain parameter 415
SMÍTALOVÁ K.: Dealy makes problems in population modelling 421

SUPPLEMENT (in the EQUADIFF 6 edition only)

ARSCOTT F.: Analytical and computational problems in higher special functions 427
CHANTURIA T. A.: On oscillation of solutions of linear ordinary differential equations 431
FAZEKAS F.: Deterministic and stochastic vector differential equations applied in technical systems theory 435
HASLINGER J.: Shape optimization in contact problems 445
KLÖTZLER R.: Zur analytischen Lösung alter und neuer geometrischer Optimieringsprobleme 451
KOSHELEV A. I.: On the smoothness of the solutions to the elliptic systems 459
KUSANO T.: On the asymptotic behavior of solutions of nonlinear ordinary differential equations 465