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Topics in Functional Differential and Difference Equations
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Topics in Functional Differential and Difference Equations

Teresa Faria
Pedro Freitas
Editors
The Fields Institute for Research in Mathematical Sciences

The Fields Institute is named in honour of the Canadian mathematician John Charles Fields (1863–1932). Fields was a visionary who received many honours for his scientific work, including election to the Royal Society of Canada in 1909 and to the Royal Society of London in 1913. Among other accomplishments in the service of the international mathematics community, Fields was responsible for establishing the world’s most prestigious prize for mathematics research—the Fields Medal.

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10 9 8 7 6 5 4 3 2 1 06 05 04 03 02 01
# Contents

Preface xi

List of Participants xiii

Monotonicity for Some Reaction-Diffusion Systems with Delay and Dirichlet Boundary Conditions S. Amraoui and S. Lalaoui Rhali 1

Lyapunov’s Direct Method and Parametric Resonance in Linear Systems with Delay O. V. Anashkin 11


Existence of Periodic Solution for a Class of Delay Differential Equations with Impulses M. Bachar and P. Magal 37

Damped Wave Equations with Delay A. Bátkai and S. Piazzera 51

Global Attractor for a Class of Partial Functional Differential Equations with Infinite Delay H. Bouzahir and K. Ezzinbi 63

Differential Equations with Hereditary Structure Induced by a Volterra Type Property R. Ceppitelli and L. Faina 73

Asymptotic Analysis of Binomial Recurrences G. Derfel and F. Vogl 93

Collision of Global Orbits in $C^\infty$ Retarded Functional Differential Equations L. Fichmann and W. M. Oliva 105

One-to-oneness and Hyperbolicity L. Fichmann and W. M. Oliva 113
Modeling the Spread of Feline Leukemia Virus in Heterogeneous Habitats
W. E. FITZGIBBON, M. LANGLAIS and J. J. MORGAN

133

Bursting Activity in a Model of a Neuron with Recurrent Synaptic Feedback
F. GIANNAKOPOULOS, C. HAUPTMANN and A. ZAPP

147

On \( x_{n+1} = \max \left\{ \frac{1}{x_n}, \frac{A_n}{x_{n-1}} \right\} \) with a Period 3 Parameter
E. A. GROVE, C. KENT, G. LADAS and M. A. RADIN

161

Stability in Delay Perturbed Differential and Difference Equations
I. GYŐRİ and F. HARTUNG

181

Some Problems in FDE
J. K. HALE

195

Non-Linear Feedback Systems with Memory: From 0-th to Higher Order, Discrete and Continuous
U. AN DER HEIDEN

223

Dynamics of Inhibitory Artificial Neural Networks with Threshold Nonlinearity
L. HUANG and J. WU

235

Dimension of Space of Solutions for a Linear Nonautonomous Infinite Delay Differential Equation
W. HUANG

245

Unstable Sets of Periodic Orbits and the Global Attractor for Delayed Feedback
T. KRISZTIN

267

Uniform Exponential Stability of Controlled Quasilinear Systems and Functional Differential Equations
E. LITSYN, Y. V. NEPOMNYASHCHIK and A. PONOSOV

297

Finite Pole Assignment of Retarded Dynamical Systems in Hilbert Spaces
S. NAKAGIRI

307

Inverse Problems for Nonself-Adjoint Evolutionary Systems
S. M. VERDUYN LUNEL

321

Contracting Return Maps for Some Delay Differential Equations
H.-O. WALThER

349
Normal Forms for Neutral Functional Differential Equations
M. Weerermann 361

A Functional Differential Equation and $3n + 1$ Dynamics
G. J. Wirsching 369
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Preface

This volume contains papers authored by participants in the Conference on Functional Differential and Difference Equations which was held at the Department of Mathematics of Instituto Superior Técnico, Lisbon, Portugal, July 26-30, 1999.

One of the objectives of the conference was to bring together mathematicians working in a variety of different aspects of functional differential and difference equations. This is reflected in the papers presented here which are original contributions covering a wide range of topics including qualitative properties of solutions, bifurcation and stability theory, oscillatory behaviour, control theory and feedback systems, biological models, state-dependent delay equations, Lyapunov methods, etc.

There were 48 talks, of which 16 were one-hour plenary lectures. The plenary speakers were Ovide Arino (Université de Pau et des Pays de l’Adour), William Fitzgibbon (University of Houston), Istvan Gyori (Veszpréum University), Jack K. Hale (Georgia Institute of Technology), Uwe an der Heiden (Universität Witten/Herdecke), Wenzhang Huang (University of Alabama), Tibor Krisztin (Bolyai Institute/Attila József University of Szeged), Gerry Ladas (University of Rhode Island), Michael Mackey (McGill University), John Mallet-Paret (Brown University), Roger Nussbaum (Rutgers), Waldyr Oliva (Instituto Superior Técnico), George R. Sell (University of Minnesota), Sjoerd Verduyn-Lunel (Universiteit Leiden), Günther Wirsching (Katolische Universität Eichstätt) and J. Wu (York University).

Another of our aims was for this conference to be the first in a periodic series of meetings in the area of functional equations. We hope that this will be achieved, and there are encouraging signs that a second conference on functional differential and difference equations will be organized by Sjoerd Verduyn-Lunel (Leiden) and Ovide Arino (Pau) in 2002.

The conference was supported by the Fundação para a Ciência e Tecnologia, Portugal, the Centro de Análise Matemática, Geometria e Sistemas Dinâmicos at Instituto Superior Técnico, the Centro de Matemática e Aplicações Fundamentais at the Universidade de Lisboa.

At a personal level, we would like to thank José Manuel Ferreira who co-organized the conference, Maria Ribeiro Gomes for her secretarial support without which everything would have been much more complicated, and Alesia Zuccala, the Publications Manager of the Fields Institute, for her assistance which made the publication of this volume seem easy.
Finally, we would like to thank all the participants for making this an enjoyable experience, and all the referees for their thorough review of the manuscripts submitted to this volume.

Teresa Faria  
Pedro Freitas  
Editors  
September 2000
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Topics in Functional Differential and Difference Equations
Teresa Faria and Pedro Freitas, Editors

This volume contains papers written by participants at the Conference on Functional Differential and Difference Equations held at the Instituto Superior Técnico in Lisbon, Portugal. The conference brought together mathematicians working in a wide range of topics, including qualitative properties of solutions, bifurcation and stability theory, oscillatory behavior, control theory and feedback systems, biological models, state-dependent delay equations, Lyapunov methods, etc. Articles are written by leading experts in the field. A comprehensive overview is given of these active areas of current research. The book will be of interest to both theoretical and applied mathematical scientists.