Professor Czesław Olech

Dedicated to
Professor Czesław Olech

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PREFACE

This volume contains some of the talks given at the Workshop on

Optimal Control of Ordinary Differential Equations

which was organized in the *Stefan Banach Center of Mathematical Studies* in Warsaw (Poland) on August 30 – September 4, 2004.

The Workshop was dedicated to **Professor CZESŁAW OLECH** in recognition of his seminal contributions to optimal control theory. It was sponsored by:

- *European Community Center of Excellence*, program *Nonlinear Systems and Controls*,
- *Institute of Mathematics of the Polish Academy of Sciences*,
- *Systems Research Institute of the Polish Academy of Sciences*,
- *Warsaw School of Information Technology*.

The Workshop was attended by 45 participants coming from eleven countries. Twenty four one-hour invited lectures were delivered. All papers included in this issue have passed the refereeing process standard for this journal.

Asen L. Dontchev Kazimierz Malanowski

Lectures delivered in frames of the Workshop

Optimal Control of Ordinary Differential Equations

- *Optimal control and Hamiltonian dynamics,*
  Andrei Agrachev,
  SISSA-ISAS, Trieste, Italy.

- *Bang-bang control in the singular perturbations limit*
  Zvi Artstein,
  Department of Mathematics, The Weizmann Institute of Science, Rehovot, Israel.

- *Variational theory of optimal taxation*
  Pavol Brunovský
  Institute of Applied Mathematics, Comenius University , Bratislava, Slovakia.

- *New necessary conditions in optimal control*
  Francis Clarke
  Institut universitaire de France et Université de Lyon, Lyon, France.

- *Nonlocal metric regularity of nonlinear operators*
  Andrei V. Dmitruk
  CEMI, Russian Academy of Sciences, Moscow, Russia.

- *On the global asymptotic stability problem and the Jacobian conjecture*
  Ludwik M. Drużkowski
  Institute of Mathematics, Jagiellonian University, Kraków, Poland.

- *On stability properties of optimal bang-bang controls for linear and semilinear systems*
  Ursula Felgenhauer
  Institut für Mathematik, Brandenburgische Technische Universität, Cottbus, Germany.

- *Regularity of the boundary of reachable sets and semiconcavity of the value function*
  Héléne Frankowska
  CREA, Ecole Polytechnique, Paris, France.

- *Decomposable mappings and integral functionals,*
  Andrzej Fryszkowski
  Faculty of Mathematics and Information Science,
  Warsaw University of Technology, Warsaw, Poland.

- *Discovery of the maximum principle,*
  Revas V. Gamkrelidze
  Stieklov Mathematical Institute, Russian Academy of Sciences,
  Moscow, Russia.

- *Differential inclusions with unbounded values:*
  regularity, existence and relaxation,
  Alexander Ioffe
  Department of Mathematics, Technion, Haifa, Israel.

- *On the role of singular extremals,*
  Bronisław Jakubczyk
  Institute of Applied Mathematics and Mechanics, Warsaw University,
  and Institute of Mathematics, Polish Academy of Sciences,
  Warsaw, Poland.

- *Nonlinear wave equations with nonmonotone,*
  degenerate damping and source terms
  Irena Lasiecka
  Department of Mathematics, University of Virginia,
  Charlottesville, Virginia, USA.

- *Sensitivity analysis and real–time control*
  for optimal bang–bang control problems
  Helmut Maurer
  Westfälische Wilhelms–Universität Münster
  Institut für Numerische und Angewandte Mathematik
  Münster, Germany.

- *Optimal control of evolutionand partial differential inclusions*
  Boris S. Mordukhovich
  Department of Mathematics, Wayne State University
  Detroit, Michigan, USA.

- *On equivalence of second order optimality conditions for bang–bang control problems*
  Nikolai P. Osmolovskii
  Department of Applied Mathematics, Moscow State Civil Engineering University
  Moscow, Russia.

- *Differentiability and inversion of multimappings and differential inclusions*
  Jean-Paul Penot
  Faculté des sciences, Laboratoire de mathématiques appliquées,
  Université de Pau, Pau, France.

- *Approximation of the value functions of control systems with state discontinuous dynamics*
  Sławomir Plaskacz
  Department of Mathematics and Informatics,
  Nicholas Copernicus University, Toruń, Poland.

- *On extensions of Ważewski topological principle to differential inclusions*
  Marc Quincampoix
  Département de Mathématiques, Université de Bretagne Occidentale,
  Brest, France.

- *Bifurcations of control-affine systems in the plane*
  Witold Respondek
  Institut National des Sciences Appliques,
  Mont Saint Aignan, France.

- *Paraconvex analysis*
  Stefan Rolewicz
  Institute of Mathematics, Polish Academy of Sciences,
  Warsaw, Poland.

- *Singular perturbations and optimality conditions in shape optimization*
  Jan Sokołowski
  Institut Elie Cartan, Laboratoire de Mathematiques,
  Universite Henri Poincare Nancy I, Nancy, France
  and Systems Research Institute, Polish Academy of Sciences
  Warsaw, Poland.

- *On some approximation problems related to time-discretizations of control systems*
  Vladimir M. Veliov
  Institute of Mathematical Methods in Economics,
  Vienna University of Technology, Vienna, Austria.

- *Second order conditions in optimal periodic control: an application to the sailboat control problem*
  Richard B. Vinter
  Department of Electrical and Electronic Engineering,
  Imperial College of Science, Technology and Medicine
  London, UK.

- *Controllability and Liouville problem*
  Jerzy Zabczyk
  Institute of Mathematics, Polish Academy of Sciences,
  Warsaw, Poland.