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Janusz Kacprzyk, Polish Academy of Sciences, Warsaw, Poland
e-mail: kacprzyk@ibspan.waw.pl

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The series “Studies in Systems, Decision and Control” (SSDC) covers both new developments and advances, as well as the state of the art, in the various areas of broadly perceived systems, decision making and control- quickly, up to date and with a high quality. The intent is to cover the theory, applications, and perspectives on the state of the art and future developments relevant to systems, decision making, control, complex processes and related areas, as embedded in the fields of engineering, computer science, physics, economics, social and life sciences, as well as the paradigms and methodologies behind them. The series contains monographs, textbooks, lecture notes and edited volumes in systems, decision making and control spanning the areas of Cyber-Physical Systems, Autonomous Systems, Sensor Networks, Control Systems, Energy Systems, Automotive Systems, Biological Systems, Vehicular Networking and Connected Vehicles, Aerospace Systems, Automation, Manufacturing, Smart Grids, Nonlinear Systems, Power Systems, Robotics, Social Systems, Economic Systems and other. Of particular value to both the contributors and the readership are the short publication timeframe and the world-wide distribution and exposure which enable both a wide and rapid dissemination of research output.

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Victor A. Sadovnichiy · Mikhail Z. Zgurovsky
Editors

Advances in Dynamical Systems and Control

 Springer

Editors

Victor A. Sadovnichiy
Lomonosov Moscow State University
Moscow
Russia

Mikhail Z. Zgurovsky
National Technical University of Ukraine
“Kyiv Polytechnic Institute”
Kyiv
Ukraine

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Preface

Given collected articles have been organized as a result of open joint academic panels of research workers from Faculty of Mechanics and Mathematics of Lomonosov Moscow State University and Institute for Applied Systems Analysis of the National Technical University of Ukraine “Kyiv Polytechnic Institute,” devoted to applied problems of mathematics, mechanics, and engineering, which attracted attention of researchers from leading scientific schools of Brazil, France, Germany, Poland, Russian Federation, Spain, Mexico, Ukraine, USA, and other countries. Modern technological applications require development and synthesis of fundamental and applied scientific areas, with a view to reducing the gap that may still exist between theoretical basis used for solving complicated technical problems and implementation of obtained innovations. To solve these problems, mathematicians, mechanics, and engineers from wide research and scientific centers have been worked together. Results of their joint efforts, including applied methods of modern algebra and analysis, fundamental and computational mechanics, nonautonomous and stochastic dynamical systems, optimization, control and decision sciences for continuum mechanics problems, are partially presented here. In fact, serial publication of such collected papers to similar seminars is planned.

This is the sequel of earlier two volumes “Continuous and Distributed Systems: Theory and Applications.” In this volume, we are focusing on recent advances in dynamical systems and control (theoretical bases as well as various applications):

- (1) we benefit from the presentation of modern mathematical modeling methods for the qualitative and numerical analysis of solutions for complicated engineering problems in physics, mechanics, biochemistry, geophysics, biology, and climatology;
- (2) we try to close the gap between mathematical approaches and practical applications (international team of experienced authors closes the gap between abstract mathematical approaches, such as applied methods of modern analysis, algebra, fundamental and computational mechanics, nonautonomous and

stochastic dynamical systems, on the one hand, and practical applications in nonlinear mechanics, optimization, decision-making theory, and control theory on the other); and

- (3) we hope that this compilation will be of interest to mathematicians and engineers working at the interface of these fields.

Moscow
Kyiv
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Victor A. Sadovnichiy
Mikhail Z. Zgurovsky

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Contributors

Yusuke Asai Department of Hygiene, Graduate School of Medicine, Hokkaido University, Sapporo, Japan

Irina N. Balaba Tula State Lev Tolstoy Pedagogical University, Tula, Russia

Francisco Balibrea Facultad de Matemáticas, Campus de Espinardo, Universidad de Murcia, Murcia, Spain

Lesia V. Baranovska Institute for Applied System Analysis, National Technical University of Ukraine “Kyiv Polytechnic Institute”, Kyiv, Ukraine

Tomás Caraballo Departamento de Ecuaciones Diferenciales y Análisis Numérico, Universidad de Sevilla, Sevilla, Spain

Laurence Cherfils Université de La Rochelle, Laboratoire Mathématiques, Image et Applications, La Rochelle Cedex, France

Jose S. Cánovas Departamento de Matemática Aplicada y Estadística, Universidad Politécnica de Cartagena, Cartagena, Spain

Nikolai N. Dobrovolsky Tula State Lev Tolstoy Pedagogical University, Tula, Russia

Nikolai M. Dobrovol'skii Tula State Lev Tolstoy Pedagogical University, Tula, Russia

Gleb V. Fedorov Mechanics and Mathematics Faculty, Moscow State University, Moscow, Russia; Research Institute of System Development, Russian Academy of Sciences, Moscow, Russia

Victoria V. Fokicheva Lomonosov Moscow State University, Moscow, Russia

Anatoly T. Fomenko Lomonosov Moscow State University, Moscow, Russia

Vladimir V. Galatenko Lomonosov Moscow State University, Moscow, Russian Federation

María J. Garrido-Atienza Departamento de Ecuaciones Diferenciales y Análisis Numérico, Universidad de Sevilla, Sevilla, Spain

Dimitri V. Georgievskii Moscow State University, Moscow, Russia

Mark O. Gluzman Department of Applied Physics and Applied Mathematics, Columbia University, New York, NY, USA

Iryna M. Gorban Institute of Hydromechanics, National Academy of Sciences of Ukraine, Kyiv, Ukraine

Nataliia V. Gorban Institute for Applied System Analysis, National Technical University of Ukraine “Kyiv Polytechnic Institute”, Kyiv, Ukraine

Xiaoying Han Department of Mathematics and Statistics, Auburn University, Auburn, AL, USA

Alexander O. Ivanov Mechanical and Mathematical Faculty, Lomonosov Moscow State University, Moscow, Russian Federation; Bauman Moscow Technical University, Moscow, Russia

Olena A. Kapustian Taras Shevchenko National University of Kyiv, Kyiv, Ukraine; Institute for Applied System Analysis, National Technical University of Ukraine “Kyiv Polytechnic Institute”, Kyiv, Ukraine

Volodymyr O. Kapustyan National Technical University of Ukraine “Kyiv Polytechnic Institute”, Kyiv, Ukraine

Oleksiy V. Kapustyan Taras Shevchenko National University of Kyiv, Kyiv, Ukraine; Institute for Applied System Analysis, National Technical University of Ukraine “Kyiv Polytechnic Institute”, Kyiv, Ukraine

Pavlo O. Kasyanov Institute for Applied System Analysis, National Technical University of Ukraine “Kyiv Polytechnic Institute”, Kyiv, Ukraine

Olha V. Khomenko Institute for Applied System Analysis, National Technical University of Ukraine “Kyiv Polytechnic Institute”, Kyiv, Ukraine

Peter E. Kloeden School of Mathematics and Statistics, Huazhong University of Science & Technology, Wuhan, China; Felix-Klein-Zentrum Für Mathematik, TU Kaiserslautern, Kaiserslautern, Germany

Peter I. Kogut Department of Differential Equations, Dnipropetrovsk National University, Dnipropetrovsk, Ukraine

Olha P. Kupenko Department of System Analysis and Control, National Mining University, Dnipro, Ukraine; Institute for Applied and System Analysis of National Technical University of Ukraine “Kyiv Polytechnic Institute”, Kyiv, Ukraine

Taras P. Lukashenko Lomonosov Moscow State University, Moscow, Russian Federation

Javier López-de-la-Cruz Departamento de Ecuaciones Diferenciales y Análisis Numérico, Universidad de Sevilla, Sevilla, Spain

Oleg K. Mazur National University of Food Technologies, Kyiv, Ukraine

Yuriy L. Milyavsky Institute for Applied System Analysis, National Technical University of Ukraine “Kyiv Polytechnic Institute”, Kyiv, Ukraine

Alain Miranville Université de Poitiers, Laboratoire de Mathématiques et Applications, UMR CNRS 7348 - SP2MI, Chasseneuil Futuroscope Cedex, France

Nadezhda I. Nedashkovskaya Institute for Applied System Analysis, National Technical University of Ukraine “Kyiv Polytechnic Institute”, Kyiv, Ukraine

Lillia S. Paliichuk Institute for Applied System Analysis, National Technical University of Ukraine “Kyiv Polytechnic Institute”, Kyiv, Ukraine

Nataliya D. Pankratova Institute for Applied System Analysis, National Technical University of Ukraine “Kyiv Polytechnic Institute”, Kyiv, Ukraine

Shuiran Peng Université de Poitiers, Laboratoire de Mathématiques et Applications, UMR CNRS 7348 - SP2MI, Chasseneuil Futuroscope Cedex, France

Boris E. Pobedria Moscow State University, Moscow, Russia

Ivan O. Pyshnograiev National Technical University of Ukraine “Kyiv Polytechnic Institute”, Kyiv, Ukraine

Irina Yu. Rebrova Tula State Lev Tolstoy Pedagogical University, Tula, Russia

Victor D. Romanenko Institute for Applied System Analysis, National Technical University of Ukraine “Kyiv Polytechnic Institute”, Kyiv, Ukraine

Iryna V. Romaniuk Taras Shevchenko National University of Kyiv, Kyiv, Ukraine

Alina V. Rusina Taras Shevchenko National University of Kyiv, Kyiv, Ukraine

Victor A. Sadovnichiy Lomonosov Moscow State University, Moscow, Russian Federation

Jacson Simsen Instituto de Matemática e Computação, Universidade Federal de Itajubá, Itajubá, MG, Brazil; Fakultät für Mathematik, Universität Duisburg-Essen, Essen, Germany

Dmitrii K. Sobolev Moscow State Pedagogical University, Moscow, Russian Federation

Valentina N. Soboleva Moscow State Pedagogical University, Moscow, Russian Federation

Alla M. Tkachuk Faculty of Automation and Computer Systems, National University of Food Technologies, Kyiv, Ukraine

Alexey A. Tuzhilin Mechanical and Mathematical Faculty, Lomonosov Moscow State University, Moscow, Russian Federation

José Valero Centro de Investigación Operativa, Universidad Miguel Hernández de Elche, Elche (Alicante), Spain

Mikhail Z. Zgurovsky National Technical University of Ukraine “Kyiv Polytechnic Institute”, Kyiv, Ukraine