

# New Developments in Pure and Applied Mathematics

- Proceedings of the International Conference on Mathematical Methods, Mathematical Models and Simulation in Science and Engineering (MMSSE 2015)
- Proceedings of the International Conference on Pure Mathematics - Applied Mathematics (PM-AM 2015)

Vienna, Austria, March 15-17, 2015

*Edited by*

Nikos Mastorakis  
Panos M. Pardalos  
Ravi P. Agarwal

# **NEW DEVELOPMENTS in PURE and APPLIED MATHEMATICS**

**Proceedings of the International Conference on Mathematical  
Methods, Mathematical Models and Simulation in Science and  
Engineering (MMSSE 2015)**

**Proceedings of the International Conference on Pure Mathematics -  
Applied Mathematics (PM-AM 2015)**

**Vienna, Austria  
March 15-17, 2015**

# **NEW DEVELOPMENTS in PURE and APPLIED MATHEMATICS**

**Proceedings of the International Conference on Mathematical Methods, Mathematical Models and Simulation in Science and Engineering (MMSSE 2015)**

**Proceedings of the International Conference on Pure Mathematics - Applied Mathematics (PM-AM 2015)**

**Vienna, Austria  
March 15-17, 2015**

**Copyright © 2015, by the editors**

All the copyright of the present book belongs to the editors. All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise, without the prior written permission of the editors.

All papers of the present volume were peer reviewed by no less than two independent reviewers. Acceptance was granted when both reviewers' recommendations were positive.

Series: Mathematics and Computers in Science and Engineering Series | 42

ISSN: 2227-4588

ISBN: 978-1-61804-287-3

# **NEW DEVELOPMENTS in PURE and APPLIED MATHEMATICS**

**Proceedings of the International Conference on Mathematical  
Methods, Mathematical Models and Simulation in Science and  
Engineering (MMSSE 2015)**

**Proceedings of the International Conference on Pure Mathematics -  
Applied Mathematics (PM-AM 2015)**

**Vienna, Austria  
March 15-17, 2015**



## Organizing Committee

### Editors:

Professor Nikos E. Mastorakis, Technical University of Sofia, Bulgaria  
Professor Panos M. Pardalos, University of Florida, USA  
Professor Ravi P. Agarwal, Department of Mathematics, Texas A&M University

### Program Committee:

Prof. Lotfi Zadeh (IEEE Fellow, University of Berkeley, USA)  
Prof. Leon Chua (IEEE Fellow, University of Berkeley, USA)  
Prof. Michio Sugeno (RIKEN Brain Science Institute (RIKEN BSI), Japan)  
Prof. Dimitri Bertsekas (IEEE Fellow, MIT, USA)  
Prof. Demetri Terzopoulos (IEEE Fellow, ACM Fellow, UCLA, USA)  
Prof. Georgios B. Giannakis (IEEE Fellow, University of Minnesota, USA)  
Prof. George Vachtsevanos (Georgia Institute of Technology, USA)  
Prof. Abraham Bers (IEEE Fellow, MIT, USA)  
Prof. Brian Barsky (IEEE Fellow, University of Berkeley, USA)  
Prof. Aggelos Katsaggelos (IEEE Fellow, Northwestern University, USA)  
Prof. Josef Sifakis (Turing Award 2007, Ecole Polytechnique Federale de Lausanne, Lausanne, Switzerland)  
Prof. Hisashi Kobayashi (Princeton University, USA)  
Prof. Kinshuk (Fellow IEEE, Massey Univ. New Zealand),  
Prof. Leonid Kazovsky (Stanford University, USA)  
Prof. Narsingh Deo (IEEE Fellow, ACM Fellow, University of Central Florida, USA)  
Prof. Kamisetty Rao (Fellow IEEE, Univ. of Texas at Arlington, USA)  
Prof. Anastassios Venetsanopoulos (Fellow IEEE, University of Toronto, Canada)  
Prof. Steven Collicott (Purdue University, West Lafayette, IN, USA)  
Prof. Nikolaos Paragios (Ecole Centrale Paris, France)  
Prof. Nikolaos G. Bourbakis (IEEE Fellow, Wright State University, USA)  
Prof. Stamatios Kartalopoulos (IEEE Fellow, University of Oklahoma, USA)  
Prof. Irwin Sandberg (IEEE Fellow, University of Texas at Austin, USA),  
Prof. Michael Sebek (IEEE Fellow, Czech Technical University in Prague, Czech Republic)  
Prof. Hashem Akbari (University of California, Berkeley, USA)  
Prof. Yuriy S. Shmaliy, (IEEE Fellow, The University of Guanajuato, Mexico)  
Prof. Lei Xu (IEEE Fellow, Chinese University of Hong Kong, Hong Kong)  
Prof. Paul E. Dimotakis (California Institute of Technology Pasadena, USA)  
Prof. M. Pelikan (UMSL, USA)  
Prof. Patrick Wang (MIT, USA)  
Prof. Wasfy B Mikhael (IEEE Fellow, University of Central Florida Orlando, USA)  
Prof. Sunil Das (IEEE Fellow, University of Ottawa, Canada)  
Prof. Panos Pardalos (University of Florida, USA)  
Prof. Nikolaos D. Katopodes (University of Michigan, USA)  
Prof. Bimal K. Bose (Life Fellow of IEEE, University of Tennessee, Knoxville, USA)  
Prof. Janusz Kacprzyk (IEEE Fellow, Polish Academy of Sciences, Poland)  
Prof. Sidney Burrus (IEEE Fellow, Rice University, USA)  
Prof. Biswa N. Datta (IEEE Fellow, Northern Illinois University, USA)  
Prof. Mihai Putinar (University of California at Santa Barbara, USA)  
Prof. Włodzisław Duch (Nicolaus Copernicus University, Poland)  
Prof. Tadeusz Kaczorek (IEEE Fellow, Warsaw University of Technology, Poland)  
Prof. Michael N. Katehakis (Rutgers, The State University of New Jersey, USA)  
Prof. Pan Agathoklis (Univ. of Victoria, Canada)  
Prof. P. Demokritou (Harvard University, USA)  
Prof. P. Razelos (Columbia University, USA)  
Dr. Subhas C. Misra (Harvard University, USA)  
Prof. Martin van den Toorn (Delft University of Technology, The Netherlands)

Prof. Malcolm J. Crocker (Distinguished University Prof., Auburn University, USA)  
Prof. S. Dafermos (Brown University, USA)  
Prof. Urszula Ledzewicz, Southern Illinois University, USA.  
Prof. Dimitri Kazakos, Dean, (Texas Southern University, USA)  
Prof. Ronald Yager (Iona College, USA)  
Prof. Athanassios Manikas (Imperial College, London, UK)  
Prof. Keith L. Clark (Imperial College, London, UK)  
Prof. Argyris Varonides (Univ. of Scranton, USA)  
Prof. S. Furfari (Direction Generale Energie et Transports, Brussels, EU)  
Prof. Constantin Udriste, University Politehnica of Bucharest, ROMANIA  
Prof. Patrice Brault (Univ. Paris-sud, France)  
Prof. Jim Cunningham (Imperial College London, UK)  
Prof. Philippe Ben-Abdallah (Ecole Polytechnique de l'Universite de Nantes, France)  
Prof. Photios Anninos (Medical School of Thrace, Greece)  
Prof. Ichiro Hagiwara, (Tokyo Institute of Technology, Japan)  
Prof. Andris Buikis (Latvian Academy of Science, Latvia)  
Prof. Akshai Aggarwal (University of Windsor, Canada)  
Prof. George Vachtsevanos (Georgia Institute of Technology, USA)  
Prof. Ulrich Albrecht (Auburn University, USA)  
Prof. Imre J. Rudas (Obuda University, Hungary)  
Prof. Alexey L Sadovski (IEEE Fellow, Texas A&M University, USA)  
Prof. Amedeo Andreotti (University of Naples, Italy)  
Prof. Ryszard S. Choras (University of Technology and Life Sciences Bydgoszcz, Poland)  
Prof. Remi Leandre (Universite de Bourgogne, Dijon, France)  
Prof. Moustapha Diaby (University of Connecticut, USA)  
Prof. Brian McCartin (New York University, USA)  
Prof. Elias C. Aifantis (Aristotle Univ. of Thessaloniki, Greece)  
Prof. Anastasios Lyrintzis (Purdue University, USA)  
Prof. Charles Long (Prof. Emeritus University of Wisconsin, USA)  
Prof. Marvin Goldstein (NASA Glenn Research Center, USA)  
Prof. Costin Cepisca (University POLITEHNICA of Bucharest, Romania)  
Prof. Kleanthis Psarris (University of Texas at San Antonio, USA)  
Prof. Ron Goldman (Rice University, USA)  
Prof. Ioannis A. Kakadiaris (University of Houston, USA)  
Prof. Richard Tapia (Rice University, USA)  
Prof. F.-K. Benra (University of Duisburg-Essen, Germany)  
Prof. Milivoje M. Kostic (Northern Illinois University, USA)  
Prof. Helmut Jaberg (University of Technology Graz, Austria)  
Prof. Ardeshir Anjomani (The University of Texas at Arlington, USA)  
Prof. Heinz Ulbrich (Technical University Munich, Germany)  
Prof. Reinhard Leithner (Technical University Braunschweig, Germany)  
Prof. Elbrous M. Jafarov (Istanbul Technical University, Turkey)  
Prof. M. Ehsani (Texas A&M University, USA)  
Prof. Sesh Commuri (University of Oklahoma, USA)  
Prof. Nicolas Galanis (Universite de Sherbrooke, Canada)  
Prof. S. H. Sohrab (Northwestern University, USA)  
Prof. Rui J. P. de Figueiredo (University of California, USA)  
Prof. Hiroshi Sakaki (Meisei University, Tokyo, Japan)  
Prof. K. D. Klaes, (Head of the EPS Support Science Team in the MET Division at EUMETSAT, France)  
Prof. Emira Maljevic (Technical University of Belgrade, Serbia)  
Prof. Kazuhiko Tsuda (University of Tsukuba, Tokyo, Japan)  
Prof. Milan Stork (University of West Bohemia, Czech Republic)  
Prof. Lajos Barna (Budapest University of Technology and Economics, Hungary)  
Prof. Nobuoki Mano (Meisei University, Tokyo, Japan)

Prof. Nobuo Nakajima (The University of Electro-Communications, Tokyo, Japan)  
Prof. Victor-Emil Neagoe (Polytechnic University of Bucharest, Romania)  
Prof. P. Vanderstraeten (Brussels Institute for Environmental Management, Belgium)  
Prof. Annaliese Bischoff (University of Massachusetts, Amherst, USA)  
Prof. Virgil Tiponut (Politehnica University of Timisoara, Romania)  
Prof. Andrei Kolyshkin (Riga Technical University, Latvia)  
Prof. Fumiaki Imado (Shinshu University, Japan)  
Prof. Sotirios G. Ziavras (New Jersey Institute of Technology, USA)  
Prof. Constantin Volosencu (Politehnica University of Timisoara, Romania)  
Prof. Marc A. Rosen (University of Ontario Institute of Technology, Canada)  
Prof. Alexander Zemliak (Puebla Autonomous University, Mexico)  
Prof. Thomas M. Gatton (National University, San Diego, USA)  
Prof. Leonardo Pagnotta (University of Calabria, Italy)  
Prof. Yan Wu (Georgia Southern University, USA)  
Prof. Daniel N. Riahi (University of Texas-Pan American, USA)  
Prof. Alexander Grebennikov (Autonomous University of Puebla, Mexico)  
Prof. Bennie F. L. Ward (Baylor University, TX, USA)  
Prof. Guennadi A. Kouzaev (Norwegian University of Science and Technology, Norway)  
Prof. Eugene Kindler (University of Ostrava, Czech Republic)  
Prof. Geoff Skinner (The University of Newcastle, Australia)  
Prof. Hamido Fujita (Iwate Prefectural University(IPU), Japan)  
Prof. Francesco Muzi (University of L'Aquila, Italy)  
Prof. Les M. Sztandera (Philadelphia University, USA)  
Prof. Claudio Rossi (University of Siena, Italy)  
Prof. Sergey B. Leonov (Joint Institute for High Temperature Russian Academy of Science, Russia)  
Prof. Arpad A. Fay (University of Miskolc, Hungary)  
Prof. Lili He (San Jose State University, USA)  
Prof. M. Nasseh Tabrizi (East Carolina University, USA)  
Prof. Alaa Eldin Fahmy (University Of Calgary, Canada)  
Prof. Paul Dan Cristea (University "Politehnica" of Bucharest, Romania)  
Prof. Gh. Pascovici (University of Koeln, Germany)  
Prof. Pier Paolo Delsanto (Politecnico of Torino, Italy)  
Prof. Radu Munteanu (Rector of the Technical University of Cluj-Napoca, Romania)  
Prof. Ioan Dumitrasche (Politehnica University of Bucharest, Romania)  
Prof. Corneliu Lazar (Technical University Gh.Asachi Iasi, Romania)  
Prof. Miquel Salgot (University of Barcelona, Spain)  
Prof. Amaury A. Caballero (Florida International University, USA)  
Prof. Maria I. Garcia-Planas (Universitat Politecnica de Catalunya, Spain)  
Prof. Petar Popivanov (Bulgarian Academy of Sciences, Bulgaria)  
Prof. Alexander Gegov (University of Portsmouth, UK)  
Prof. Lin Feng (Nanyang Technological University, Singapore)  
Prof. Colin Fyfe (University of the West of Scotland, UK)  
Prof. Zhaohui Luo (Univ of London, UK)  
Prof. Mikhail Itskov (RWTH Aachen University, Germany)  
Prof. George G. Tsyplkin (Russian Academy of Sciences, Russia)  
Prof. Wolfgang Wenzel (Institute for Nanotechnology, Germany)  
Prof. Weilian Su (Naval Postgraduate School, USA)  
Prof. Phillip G. Bradford (The University of Alabama, USA)  
Prof. Ray Hefferlin (Southern Adventist University, TN, USA)  
Prof. Gabriella Bognar (University of Miskolc, Hungary)  
Prof. Hamid Abachi (Monash University, Australia)  
Prof. Karlheinz Spindler (Fachhochschule Wiesbaden, Germany)  
Prof. Josef Boercsoek (Universitat Kassel, Germany)  
Prof. Eyad H. Abed (University of Maryland, Maryland, USA)

Prof. Robert K. L. Gay (Nanyang Technological University, Singapore)  
Prof. Andrzej Ordys (Kingston University, UK)  
Prof. Harris Catrakis (Univ of California Irvine, USA)  
Prof. T Bott (The University of Birmingham, UK)  
Prof. Petr Filip (Institute of Hydrodynamics, Prague, Czech Republic)  
Prof. T.-W. Lee (Arizona State University, AZ, USA)  
Prof. Le Yi Wang (Wayne State University, Detroit, USA)  
Prof. John K. Galloots (Houston Community College, USA)  
Prof. Oleksander Markovskyy (National Technical University of Ukraine, Ukraine)  
Prof. Suresh P. Sethi (University of Texas at Dallas, USA)  
Prof. Hartmut Hillmer(University of Kassel, Germany)  
Prof. Bram Van Putten (Wageningen University, The Netherlands)  
Prof. Alexander Iomin (Technion - Israel Institute of Technology, Israel)  
Prof. Roberto San Jose (Technical University of Madrid, Spain)  
Prof. Minvydas Ragulskis (Kaunas University of Technology, Lithuania)  
Prof. Arun Kulkarni (The University of Texas at Tyler, USA)  
Prof. Joydeep Mitra (New Mexico State University, USA)  
Prof. Vincenzo Niola (University of Naples Federico II, Italy)  
Prof. S. Y. Chen, (Zhejiang University of Technology, China and University of Hamburg, Germany)  
Prof. Duc Nguyen (Old Dominion University, Norfolk, USA)  
Prof. Tuan Pham (James Cook University, Townsville, Australia)  
Prof. Jiri Klima (Technical Faculty of CZU in Prague, Czech Republic)  
Prof. Rossella Cancelliere (University of Torino, Italy)  
Prof. L.Kohout (Florida State University, Tallahassee, Florida, USA)  
Prof. Dr-Eng. Christian Bouquegneau (Faculty Polytechnique de Mons, Belgium)  
Prof. Wladyslaw Mielczarski (Technical University of Lodz, Poland)  
Prof. Ibrahim Hassan (Concordia University, Montreal, Quebec, Canada)  
Prof. Stavros J.Baloyannis (Medical School, Aristotle University of Thessaloniki, Greece)  
Prof. James F. Frenzel (University of Idaho, USA)  
Prof. Vilem Srovnal,(Technical University of Ostrava, Czech Republic)  
Prof. J. M. Giron-Sierra (Universidad Complutense de Madrid, Spain)  
Prof. Walter Dosch (University of Luebeck, Germany)  
Prof. Rudolf Freund (Vienna University of Technology, Austria)  
Prof. Erich Schmidt (Vienna University of Technology, Austria)  
Prof. Alessandro Genco (University of Palermo, Italy)  
Prof. Martin Lopez Morales (Technical University of Monterey, Mexico)  
Prof. Ralph W. Oberste-Vorth (Marshall University, USA)  
Prof. Vladimir Damgov (Bulgarian Academy of Sciences, Bulgaria)  
Prof. P.Borne (Ecole Central de Lille, France)

## Additional Reviewers

Jose Flores	The University of South Dakota, SD, USA
Abelha Antonio	Universidade do Minho, Portugal
Lesley Farmer	California State University Long Beach, CA, USA
Takuya Yamano	Kanagawa University, Japan
Miguel Carriegos	Universidad de Leon, Spain
Francesco Zirilli	Sapienza Universita di Roma, Italy
George Barreto	Pontificia Universidad Javeriana, Colombia
Eleazar Jimenez Serrano	Kyushu University, Japan
Tetsuya Yoshida	Hokkaido University, Japan
Philippe Dondon	Institut polytechnique de Bordeaux, France
Genqi Xu	Tianjin University, China
M. Javed Khan	Tuskegee University, AL, USA
Xiang Bai	Huazhong University of Science and Technology, China
Dmitrijs Serdjuks	Riga Technical University, Latvia
Hessam Ghasemnejad	Kingston University London, UK
José Carlos Metrôlho	Instituto Politecnico de Castelo Branco, Portugal
João Bastos	Instituto Superior de Engenharia do Porto, Portugal
Tetsuya Shimamura	Saitama University, Japan
Imre Rudas	Obuda University, Budapest, Hungary
Konstantin Volkov	Kingston University London, UK
Frederic Kuznik	National Institute of Applied Sciences, Lyon, France
James Vance	The University of Virginia's College at Wise, VA, USA
Angel F. Tenorio	Universidad Pablo de Olavide, Spain
Sorinel Oprisan	College of Charleston, CA, USA
Santoso Wibowo	CQ University, Australia
Jon Burley	Michigan State University, MI, USA
Kazuhiko Natori	Toho University, Japan
Shinji Osada	Gifu University School of Medicine, Japan
Francesco Rotondo	Polytechnic of Bari University, Italy
Deolinda Rasteiro	Coimbra Institute of Engineering, Portugal
Alejandro Fuentes-Penna	Universidad Autónoma del Estado de Hidalgo, Mexico
Moran Wang	Tsinghua University, China
Bazil Taha Ahmed	Universidad Autonoma de Madrid, Spain
Andrey Dmitriev	Russian Academy of Sciences, Russia
Masaji Tanaka	Okayama University of Science, Japan
Matthias Buyle	Artesis Hogeschool Antwerpen, Belgium
Kei Eguchi	Fukuoka Institute of Technology, Japan
Zhong-Jie Han	Tianjin University, China
Valeri Mladenov	Technical University of Sofia, Bulgaria
Ole Christian Boe	Norwegian Military Academy, Norway
Yamagishi Hiromitsu	Ehime University, Japan
Stavros Ponis	National Technical University of Athens, Greece
Minhui Yan	Shanghai Maritime University, China



## Table of Contents

<a href="#"><u>Generalized Least-Squares Regressions V: Multiple Variables</u></a>	17
<i>Nataniel Greene</i>	
<a href="#"><u>New Computational Methods for Spectrometer Signal Analysis</u></a>	26
<i>Petra Perner</i>	
<a href="#"><u>Inter-Firm Transactional Relationship in Yokokai using IDE Spatial Model: An Empirical Investigation</u></a>	32
<i>Takao Ito, Rajiv Mehta, Tsutomu Ito, Makoto Sakamoto, Satoshi Ikeda, Seigo Matsuno, Yasuo Uchida</i>	
<a href="#"><u>Informetric Models for Citation Frequency Data: An Empirical Investigation</u></a>	37
<i>Lucio Bertoli-Barsotti, Tommaso Lando</i>	
<a href="#"><u>Bounds on the Generalized Krein Parameters of an Association Scheme</u></a>	40
<i>Vasco Moco Mano, Luis Almeida Vieira</i>	
<a href="#"><u>Ridge Regression and Bootstrapping in Asthma Prediction</u></a>	44
<i>Ioannis I. Spyroglou, Eleni A. Chatzimichail, E. N. Spanou, E. Paraskakis, Alexandros G. Rigas</i>	
<a href="#"><u>Bayesian Multivariate Growth Curve Models</u></a>	49
<i>Steward H. Huang</i>	
<a href="#"><u>Effects of Dry Friction on Linear Electromechanical Actuators: A New Prognostic Method based on Simulated Annealing Algorithm</u></a>	54
<i>Matteo D. L. Dalla Vedova, Paolo Maggiore, Lorenzo Pace</i>	
<a href="#"><u>Math-Statistical Models of Income Distribution: L-moments and TL-moments and Their Estimations</u></a>	63
<i>Diana Bílková</i>	
<a href="#"><u>Stability Breakdown along a Line of Equilibria in Nonlinear Circuits with Memristors</u></a>	79
<i>Ricardo Riaza</i>	
<a href="#"><u>Modelling of Exoskeleton Movement in Verticalization Process</u></a>	83
<i>Sergey Jatsun, Sergei Savin, Petr Bezmen</i>	
<a href="#"><u>Multiobjective Genetic Algorithm-Based for Time-Cost Optimization</u></a>	88
<i>Jorge Magalhães-Mendes</i>	
<a href="#"><u>Normalizations of the Proposal Density in Markov Chain Monte Carlo Algorithms</u></a>	96
<i>Antoine E. Zambelli</i>	

<a href="#"><u>Modeling the Virtual Machine Allocation Problem</u></a>	102
<i>Zoltán Ádám Mann</i>	
<a href="#"><u>Mathematical Modeling of Incheon Bridge, Structural Monitoring</u></a>	107
<i>Gheorghe M. T. Radulescu, Corina M. Radulescu, Adrian T. Radulescu</i>	
<a href="#"><u>Systems Optimization Prospected from Torus Cyclic Groups</u></a>	115
<i>Volodymyr V. Riznyk</i>	
<a href="#"><u>A Special Constant Acceleration Curve Equation</u></a>	119
<i>Mehmet Pakdemirli, İhsan Timuçin Dolapçı</i>	
<a href="#"><u>Application of Statistic Complexity Metrics to Detection of Malware Threats in Autonomic Component Ensembles</u></a>	124
<i>A. Prangishvili, O. Shonia, I. Rodonaia, V. Rodonaia</i>	
<a href="#"><u>Numerical Calculation of the Magnetic Field Produced by a Multi-Conductor Power Cable</u></a>	130
<i>Dumitru Toader, Iulia Cata, Constantin Blaj, Alina Lihaciu</i>	
<a href="#"><u>Quasi-Conformal Harmonic Mappings Related to the Janowski Starlike Functions</u></a>	135
<i>Melike Aydogan, Yasar Polatoglu, H. Esra Ozkan Ucar, Arzu Yemisci, Yasemin Kahramaner</i>	
<a href="#"><u>EH-WSNs Optimizing Technique</u></a>	139
<i>Vladimir Shakhov</i>	
<a href="#"><u>On the Financial Applications of Multivariate Stochastic Orderings</u></a>	142
<i>Sergio Ortobelli, Tomas Tichy, Tommaso Lando, Filomena Petronio</i>	
<a href="#"><u>Mathematical Model of Two-Links Mechanism Movement at Discrete Control Actions</u></a>	146
<i>Sergey Jatsun, Sergei Savin, Petr Bezmen</i>	
<a href="#"><u>Navier-Stokes Equations-Millennium Prize Problems</u></a>	150
<i>Asset Durmagambetov, Leyla Fazilova</i>	
<a href="#"><u>On a Subclass of p-Valent Starlike Functions Associated with a Generalized Hypergeometric Differential Operator</u></a>	159
<i>Entesar El-Yagubi, Maslina Darus, Melike Aydogan</i>	
<a href="#"><u>Point Triangulation using Convex Layers</u></a>	163
<i>V. Tereshchenko, Y. Tereshchenko</i>	
<a href="#"><u>Onboard Electromechanical Actuators Affected by Motor Static Eccentricity: A New Prognostic Method based on Spectral Analysis Techniques</u></a>	166
<i>Dario Belmonte, Matteo D. L. Dalla Vedova, Paolo Maggiore</i>	

<u><a href="#">Optimal Problems with Control-State Constraints in a Regional Economy Model Identification</a></u>	173
<i>Vasily V. Dikusar, Nicholas N. Olenev, Marek Wojtowicz</i>	
<u><a href="#">The Decision Making Process in the System of Product Design and Planning based on Kansei Engineering</a></u>	181
<i>Kai-Shuan Shen</i>	
<u><a href="#">Longitudinal Dispersion Coefficient as Sensitivity Parameter in Water Quality Simulation Model</a></u>	191
<i>Yvetta Velísková, Marek Sokáč</i>	
<u><a href="#">The Tactical Model based on a Multi-Depot Vehicle Routing Problem</a></u>	196
<i>P. Stodola, J. Mazal</i>	
<u><a href="#">New Results on Stability of Hybrid Stochastic Systems</a></u>	202
<i>Manlika Rajchakit</i>	
<u><a href="#">Vision-Based Navigation and System Identification of Unmanned Underwater Survey Vehicle</a></u>	208
<i>Seda Karadeniz Kartal, M. Kemal Leblebicioğlu</i>	
<u><a href="#">The Video Game as Practice for Developing Virtual Reality Sports Jumping Skills in Children 5 Years. Case Study of Innovative Practices in Educational Institutions of Bogotá, Colombia</a></u>	215
<i>J. Lopez, L. Coy, J. Caviativa, Y. Guzman, A. Gutierrez</i>	
<u><a href="#">On Selection of Efficient Fuzzy Models Incorporated with Multi-Objective Reactive Power Control</a></u>	222
<i>Ragab A. El Sehiemy</i>	
<u><a href="#">Application of the Orthogonal Invariants of Three-Dimensional Operators in some Hydrodynamic Problems and Hubble Expansion Law</a></u>	228
<i>Ilia R. Lomidze</i>	
<u><a href="#">Features Gas Explosion in a Cylindrical Tube with a Hole on the Side</a></u>	232
<i>Iurii H. Polandov, Vitaly A. Babankov, Sergei A. Dobrikov</i>	
<u><a href="#">Double Check of Optimization Results Using Neural Network and Statistical Methods</a></u>	237
<i>Natalja Fjodorova, Marjana Novič</i>	
<u><a href="#">On the Use of Conditional Expectation Estimators</a></u>	244
<i>Sergio Ortobelli, Tommaso Lando</i>	
<u><a href="#">LQR Control of a Quadrotor Helicopter</a></u>	247
<i>Demet Canpolat Tosun, Yasemin Işık, Hakan Korul</i>	

<a href="#"><u>Molecular Dynamics Simulations for Lithographic Production of Carbon Nanotube Structures from Graphene</u></a>	253
<i>D. Fülep, I. Zsoldos, I. László</i>	
<a href="#"><u>Swarm Optimization-Based Personalization of Interactive Systems</u></a>	257
<i>Alexander Nikov, Stefka Stoeva, Tricia Rambharose</i>	
<a href="#"><u>PMSG Wind System Control for Time-Variable Wind Speed by Imposing the DC Link Current</u></a>	264
<i>Ciprian Sorandaru, Sorin Musuroi, Gheza-Mihai Erdodi, Doru-Ionut Petrescu</i>	
<a href="#"><u>Dual Approach to Complex Ecological System Analysis and Modeling</u></a>	270
<i>Migdat Hodzic, Mirsad Hadzikadic, Ted Carmichael, Suvad Selman</i>	
<a href="#"><u>Performance Estimate for a Proton Exchange Membrane Fuel Cell: Sensitivity Analysis Aimed to Optimization</u></a>	276
<i>Enrico Testa, Paolo Maggiore, Lorenzo Pace, Matteo D. L. Dalla Vedova</i>	
<a href="#"><u>The Mathematical Model of Reflection of Plane Waves in a Transversely Isotropic Magneto-Thermoelastic Medium under Rotation</u></a>	282
<i>Abo-El-Nour N. Abd-alla, Fatimah Alshaikh</i>	
<a href="#"><u>Prediction and Evaluation of Response to Breast Cancer Chemotherapy by Use of Multifractal Analysis</u></a>	290
<i>Jelena Vasiljevic, Jelena Pribic, Ksenija Kanjer, Wojtek Jonakowski, Jelena Sopta, Dragica Nikolic Vukosavljevic, Marko Radulovic</i>	
<a href="#"><u>Exponential Stability of Linear Hybrid Systems with Interval Time-Varying Delays</u></a>	295
<i>Grienggrai Rajchakit</i>	
<a href="#"><u>Modeling of a Small Unmanned Aerial Vehicle</u></a>	300
<i>Ahmed Elsayed Ahmed, Hossam Eldin Hussein Ahmed, Ashraf Hafez, Hala Mohamed Abd-Elkader, A. N. Ouda</i>	
<a href="#"><u>Gradient-Statistical Algorithm for Calculating Critical Points of Density Probability of Gaussian Mixture</u></a>	309
<i>N. N. Aprausheva, V. V. Dikusar, S. V. Sorokin</i>	
<a href="#"><u>Hall Current Effect on MHD Free Convection Flow an Inclined Porous Plate with Constant Heat Flux</u></a>	313
<i>G. Venkata Ramana Reddy</i>	
<a href="#"><u>An Optimal Manner of Distribution of Drinking Water using Heuristic Method</u></a>	325
<i>Abdullah Al-Hossain, Said Bourazza</i>	

<a href="#"><u>Certain Integrable Cases in Dynamics of a Multi-Dimensional Rigid Body in a Nonconservative Field</u></a>	328
<i>Maxim V. Shamolin</i>	
<a href="#"><u>Fuzzy-Multi Agent Hybrid System for Decision Support of Consumers of Energy from Renewable Sources</u></a>	343
<i>Otilia Dragomir, Florin Dragomir, Eugenia Minca</i>	
<a href="#"><u>A Hybrid System for Identification of Elastic, Isotropic Thin Plate Parameters Applying Lamb Waves and Artificial Neural Networks</u></a>	349
<i>Zenon Waszczyszyn, Ewa Pabisek</i>	
<a href="#"><u>Adaptive Spline Processing of Discrete Flow</u></a>	355
<i>Irina Burova, Yu. K. Dem'yanovich</i>	
<a href="#"><u>Introduction and Simulation of a New Model of Phantom by Monte Carlo to Obtain Depth Dose</u></a>	359
<i>Seyed Alireza Mousavi Shirazi</i>	
<a href="#"><u>Simulation Study of Using Shift Registers Based on 16th Degree Primitive Polynomials</u></a>	363
<i>Mirella Amelia Mioc</i>	
<a href="#"><u>Topological Optimization of Lake Aeration Process</u></a>	370
<i>Mohamed Abdelwahed</i>	
<a href="#"><u>Rigid Non-Archimedean Spaces and Applications</u></a>	375
<i>Nikolaj Glazunov</i>	
<a href="#"><u>Math Modeling of Underground Water Infiltration in Exhausted Gas Deposit</u></a>	379
<i>Irina N. Polshkova</i>	
<a href="#"><u>Mathematical Modelling of Groundwater Flow Coupled with Internal Flow in Drainage Pipe Situates in a Bounded Shallow Aquifer</u></a>	384
<i>I. David, C. Grădinaru, C. Gabor, I. Vlad, C. Stefanescu</i>	
<a href="#"><u>Generalized Real Numbers Pendulums and Transport Logistic Applications</u></a>	388
<i>A. P. Buslaev, A. G. Tatashev</i>	
<a href="#"><u>Scorpion Envenomation in Naama, Algeria</u></a>	393
<i>Schehrazad Selmane</i>	
<a href="#"><u>Mathematical Modelling of Groundwater Flow in Aquifers which Contain Extraction/infiltration Cavity of Arbitrary Shape, using the Theory of Functions of a Complex Variable</u></a>	400
<i>I. David, C. řtefănescu, C. Grădinaru, I. Vlad, C. Gabor</i>	

<a href="#"><u>One Approach to the Design of TS Fuzzy Fault Detection Filters</u></a>	406
<i>Dusan Krokavec, Anna Filasova, Vratislav Hladky</i>	
<a href="#"><u>Modeling and Simulation of a 12kW Direct Driven PM Synchronous Generator of Wind Power</u></a>	412
<i>A. Senthil Kumar, Thomas Cermak, Stanislav Misak</i>	
<a href="#"><u>Some Problems of Fuzzy Modeling of Telecommunications Networks</u></a>	418
<i>Kirill Garbuzov, Alexey S. Rodionov</i>	
<a href="#"><u>A Mathematical Model of Hierarchical Organization</u></a>	423
<i>Satoshi Ikeda, Takao Ito, Makoto Sakamoto</i>	
<a href="#"><u>Advance Trends of Hybrid Electric Vehicles</u></a>	433
<i>Shahram Javadi</i>	
<a href="#"><u>Study of a Neutron Transport Problem by the Variational Iteration Method</u></a>	441
<i>Olga Martin</i>	
<a href="#"><u>Authors Index</u></a>	449