

NSC 2012 Final Program

Venue: Óbuda University, Room F09
Address: Bécsi út 96/B, H-1034 Budapest, Hungary

August 6, Monday

8:00 – 15:00 Registration

9:00 – 9:15 Opening Ceremony

9:15 – 10:15 Plenary Session I
Session Chair: Albert C. J. Luo

Lagrange Award Speech: Sequential Behaviour in Dynamical Networks
Valentin Afraimovich

10:15 – 10:40 Coffee break

10:40 – 12:20 Session Nonlinear Dynamics from Toy Models to Complex Systems I
Session Chair: M. Leonetti

10:40 Finite-N Hamiltonian Dynamics in Long-Range Interacting Systems
Wahb Ettoumi, Ecole Polytechnique, France
Marie-Christine Firpo, CNRS - Ecole Polytechnique, France

11:00 Stabilization of modulated phases in the presence of long range interactions
Simon Villain-Guillot, Université Bordeaux I, France

11:20 Transport under a temperature gradient in complex fluids
Simon Villain-Guillot, Université Bordeaux I, France

11:40 Experimental studies of burning invariant manifolds and reaction fronts in laminar flows
Tom Solomon, Carleen Boyer and Maya Najarian, Bucknell University, USA

12:00 Pattern formation of charged membrane proteins
Marc Leonetti and Gwenn Boëdec, M2P2-Aix Marseille Université, France

Poster Session

A Signal Processing Method: Detection of Lévy Flights in Chaotic Trajectories

Francoise Briolle, CReA- Ecole de l'Air, France; Benjamin Ricaud, LATP- Aix Marseille Université, France;
and Xavier Leoncini, CPT- Aix Marseille Université, France

12:20 – 12:30 Group Photo

12:30 – 14:00 Lunch

14:00 – 16:00 Session Fractional Calculus Applications I
Session Chair: Dumitru Baleanu

14:00 On controllability for fractional differential inclusion

- Aurelian Cernea, University of Bucharest, Romania
- 14:20 Entropy Analysis of the Genetic Sequence of Six Species
Jose A. Tenreiro Machado, Institute of Engineering of Polytechnic of Porto, Portugal
- 14:40 Positivity of fractional discrete systems with sequential h-differences
Ewa Girejko and Dorota Mozyrska, Bialystok University of Technology, Poland
- 15:00 Time-fractional boundary optimal control of thermal stresses
Necati Özdemir, Balikesir University, Turkey
Yuriy Povstenko, Jan Długosz University, Częstochowa, Poland
Derya Avci and Beyza B. Iskender, Balikesir University, Bal, Turkey
- 15:20 Tuning of Fractional Order $PI^{\lambda}D^{\mu}$ controller with Response Surface Methodology
Beyza Billur Iskender, Necati Özdemir and Aslan Deniz Karaoglan
Balikesir University, Turkey
- 15:40 Fractional Hamiltonian analysis of systems with linear velocities within Hilfer derivatives
Dumitru Baleanu, Cankaya University, Ankara, Turkey
Om Agrawal, Southern Illinois University, USA
- 16:30 Welcome Reception

August 7, Tuesday

- 8:00 – 15:00 Registration
- 8:30 – 9:30 Plenary Session II
Session Chair: Dumitru Baleanu
- Zaslavsky Award Speech: Is it Possible to Replace the Probability Distribution Function Describing a Random Process by the Prony's Spectrum?
Raoul Nigmatullin
- 9:30 – 9:50 Coffee break
- 9:50 – 12:10 Session Nonlinear Dynamics of Systems with Infinite Dimension
Session Chair: Jiazhong Zhang
- 9:50 Conservation laws for a family of Benjamin-Bona-Mahony-Burgers equations
Maria Bruzón and Maria Luz Gandarias, University of Cadiz, Spain
- 10:10 Selected nonlinear effects in hot laser plasmas generated by high intensity lasers
Ervin Rácz, Óbuda University, Budapest, Hungary
- 10:30 Influence of embedded material at edges on natural frequencies of rotating annular disk
Hamid Hamidzadeh and Ehsan Sarfaraz, Tennessee State University, USA
- 10:50 Control of chaotic responses of a laminated composite beam subjected to external excitation
Liming Dai, Xiamen University of Technology, China and Lin Sun, University of Regina, Canada
- 11:10 Analytical Vibrations of a Rotating Blade with Geometric Nonlinearity
Fengxia Wang and Albert C. J. Luo, Southern Illinois University Edwardsville, USA
- 11:30 Nonlinear self-adjointness and conservation laws for a third order equation
Maria Luz Gandarias and Maria Santos Bruzon, University of Cadiz, Spain
- 11:50 Saddle-Node Bifurcations in Burgers Equation as Shock Wave Occurrence

Jia-Zhong Zhang, Xiao-Long Rend and Si-Ming Duan, Xi'an Jiaotong University, China
Yan Liu, Northwestern Polytechnical University, China

- 12:10 – 13:30 Lunch
- 13:30 – 15:30 Session Discontinuous Dynamical Systems and Synchronization II
Session Chair: Stefano Lenzi
- 13:30 A Generalized Projective Synchronization of Two Different Gyroscopes
Fuhong Min, Nanjing Normal University, China
Albert C. J. Luo, Southern Illinois University Edwardsville, USA
- 13:50 Drilling Systems Failures and Hidden Oscillations
Maria Kiseleva, Nikolay Kuznetsov, University of Jyväskylä, Finland, Gennady Leonov, St. Petersburg State University, Russia, and Pekka Neittaanmäki, University of Jyväskylä, Finland
- 14:10 Nonlinear Oscillations of an Elastic Inverted Pendulum
Grzegorz Litak, Lublin University of Technology, Poland
Mattia Coccolo, Universidad Rey Juan Carlos, Madrid, Spain
Michael I. Friswell, Shaikh F. Ali, Sondipon Adhikari, Arthur W. Lees and Onur Bilgen, Swansea University, UK
- 14:30 Chaotic solutions of a differential equation with piecewise linearity
Chunqing Lu, Southern Illinois University Edwardsville, USA
- 14:50 Chaos and Transient Chaos in a Simple Oscillator with Coulomb Friction Law
Gábor Licskó and Gábor Csernák, Budapest University of Technology and Economics, Hungary
- 15:10 A Simple Model for Pedestrian Induced Lateral Oscillations of Bridges
Stefano Lenzi, Polytechnic University of Marche, Ancona, Italy
- 15:30 – 15:50 Coffee break
- 15:50 – 17:30 Session Discontinuous Dynamical Systems and Synchronization I
Session Chair: Nikolay Kuznetsov
- 15:50 The NSCD method to analyze the dynamics of ancient masonry churches under seismic loadings
Giovanni Lancioni, Stefano Lenzi and Quintilio Piattoni, Università Politecnica delle Marche, Ancona, Italy
- 16:10 A damping device based on bistable springs
Enrico Babilio, Federico II University of Naples, Italy
- 16:30 Impact Dynamics of a Constrained Mass-Spring-Damper System
Albert C.J. Luo and Richard George, Southern Illinois University Edwardsville, USA
- 16:50 Through the Looking-Glass of the Grazing Bifurcation
Sergey Kryzhevich, Saint-Petersburg State University, Russia
J. Ing and M. Wiercigroch, University of Aberdeen, UK
- 17:10 Nonlinear Mathematical Models of Costas Loop for General Waveform of Input Signal
Nikolay Kuznetsov, Gennady Leonov, S. M. Seledzhi, St. Petersburg State University, Russia
Pekka Neittaanmaki, Marat Yuldashev and Renat Yuldashev, University of Jyväskylä, Finland

- 17:45 Bus starts from Óbuda University to Banquet venue
- 18:00 Banquet
- 20:00 Bus comes back from Banquet to Hotel Császár

August 8, Wednesday

- 8:00 – 12:00 Registration
- 8:40 – 10:20 Session Nonlinear Dynamics from Toy Models to Complex Systems II
Session Chair: Xavier Leoncini
- 8:40 Vorticity distributions generated by the successive splitting of one point vortex
Xavier Leoncini, Alain Barrat, Christophe Josserand and Simon Villain-Guillot
- 9:00 Invariant manifolds and the geometry of front propagation in fluid flows
Kevin Mitchell and John Mahoney, University of California, Merced, USA
- 9:20 Shape dynamics of settling vesicles, from pears to tethers
Marc Jaeger, Gwenn Boëdec, M2P2, AixMarseille Universite, France, and Marc Leonetti, IRPHE, AixMarseille Universite, France
- 9:40 Lobe dynamics and front propagation in advection-reaction-diffusion systems
John Mahoney and Kevin Mitchell, University of California, Merced, USA
- 10:00 Bifurcation approach to analysis of chaotic dynamics in Hamiltonian and conservative systems
Nikolai Magnitskii, Institute for Systems Analysis of RAS, Moscow, Russia
- 10:20 – 10:50 Coffee Break
- 10:50 – 12:10 Session Industrial Engineering
Session Chair: Fernanda A. Ferreira
- 10:50 Privatization and government preference in a public Stackelberg leader duopoly
Fernanda A. Ferreira and Flavio Ferreira, ESEIG, Polytechnic Institute of Porto, Portugal
- 11:10 Environmental taxes in a public Stackelberg leader duopoly
Fernanda A. Ferreira and Flávio Ferreira, ESEIG, Polytechnic Institute of Porto, Portugal
- 11:30 Optimality Conditions for Equilibrium Problems
Liana Cioban, Babes Bolyai University, Cluj-Napoca, Romania
- 11:50 Per-Unit Royalty and Fixed-Fee Licensing in a Differentiated Stackelberg Model
Flavio Ferreira, ESEIG, Polytechnic Institute of Porto, Portugal
Oana Ruxandra Bode, Babes Bolyai University, Cluj-Napoca, Romania
- 12:10 – 13:30 Lunch
- 13:30 – 15:50 Sessions Rare Regular and Chaotic Attractors in Nonlinear Dynamics; and Complex Network: Structure, Dynamics, Synchronization and Control
Session Chairs: Mikhail Zakrzhevsky and Elbert Macau
- 13:30 Stable and Unstable Periodic Solutions to the Mathieu-Duffing Oscillator

- 13:50 Albert C. J. Luo and Dennis O'Connor, Southern Illinois University Edwardsville, USA
Complete Bifurcation Analysis of Pendulum Vibration Absorber and Rare Attractors
Eugen Kremer, LuK GmbH & Co. OHG, Germany, Mikhail Zakrzhevsky and Alexey Klokov, Riga
Technical University, Latvia
- 14:10 Chaos Formation and Reduction in Robust Fixed Point Transformations Based Adaptive
Control
Krisztián Kósi, Szabolcs Hajdu, János F. Bitó, József K. Tar
Óbuda University, Budapest, Hungary
- 14:30 Complex Nonlinear Effects and Rare Attractors in Bilinear Valve Systems Under Forced
Excitations
E. P. Shilvan, M. V. Zakrzhevsky
Riga Technical University, Latvia
- 14:50 Rare Periodic and Chaotic Attractors and Typical Bifurcation Groups in Driven Double-well and
Many-well Potential Oscillatory Systems
M. Zakrzhevsky
Riga Technical University, Latvia
- 15:10 Rare Attractors in Typical Nonlinear Discrete Dynamical Models
V. Yevstignejev, A. Klokov, R. Smirnova and I. Schukin
Riga Technical University, Latvia
- 15:30 The Software Package Dependency Networks of some Linux Distributions
Árpád Horváth, Óbuda University, Székesfehérvár, Hungary

Poster Session

A Framework for Generating and Complexity Assessment of Assembly Supply Chains
Vladimir Modrak and David Marton, Technical University of Košice, Slovakia

15:50 – 16:10 Coffee break

16:10 – 17:10 Session Modeling Nonlinear Phenomena

Session Chair: Carla Pinto

16:10 A Modified Mathematical Model for Malaria Transmission under Control Strategies

Carla Pinto and Diana Rocha, University of Porto, Portugal

16:30 A New Mathematical Model for Co-Infection of Malaria and HIV

Carla Pinto and Diana Rocha, University of Porto, Portugal

16:50 Identification of turning and milling processes by stochastic Langevin equations

Grzegorz Litak and Rafal Rusinek, Lublin University of Technology, Poland

Poster Session

Gender Classification Using Bayesian Classifier with Local Binary Patch Features

Huang-Chia Shih and Che-Yen Chuang, Yuan Ze University, Taoyuan, Taiwan

Chung-Lin Huang and Chi-Hua Lin, National Tsing Hua University, Hsinchu, Taiwan

17:10 Closing Ceremony

August 9, Thursday

Budapest Grand City Tour