TECHNICAL PROGRAM

MONDAY, JUNE 30

Monday, June 30, 9:30–12:30
Hotel Saint-Petersburg, Conference Hall

Opening Ceremony and Plenary Session I
Chair:

9:50–10:35
Control of multi-agent systems: A passivity-based perspective
M. W. Spong (*University of Illinois at Urbana-Champaign, US*)

10:35–11:00 – Coffee break

11:00–11:45
Adiabatic invariants
A. Neishtadt (*Russia; UK*)

11:45–12:30
Fractional derivatives and their applications
J. T. Machado (*Institute of Engineering of Porto, Portugal*)**, O. P. Agrawal** (*Southern Illinois University, USA*)

12:40–14:45 – Transfer to ENOC'08 venue (University building at Vasilievsky Island). Lunch

14:45–15:30 – Coffee

Monday, June 30, 15:00–17:30
Room 1

Mini-Symposium "Nonlinear Dynamics of Structures and Machines-I"
Organizers: Matthew P. Cartmell (*UK*)**, Yuri V. Mikhlin** (*Ukraine*)**, Konstantin V. Avramov** (*Ukraine*)

Session MoP1, "Nonlinear Dynamics of Structures and Machines. General Section"
Co-chairs: Konstantin Avramov (*Ukraine*)**, José Manoel Balthazar** (*Brazil*)

15:00–15:30
On the assumptions and decisions required for reduced order modelling of engineering dynamical systems
M. P. Cartmell, D. I. M. Forehand (*University of Glasgow, UK*)

15:30–16:00
Nonlinear normal vibration modes and their applications in some applied problems
Yu. Mikhlin, S. Mitrokhin (*National Technical University, Ukraine*)

16:00–16:30
Variation of energy and pseudo-momentum in one-dimensional translating continua
A. Metrikine (*Delft University of Technology, The Netherlands*)

16:30–17:00
Large-amplitude vibrations of rectangular plates in air or coupled to free surface liquids: theory and experiments
M. Amabili, S. Carra (*Università di Parma, Italy*)

17:00–17:30
Overall characterization of non-regular responses of thermomechanical pseudoelastic oscillators by the method of wandering trajectories
D. Bernardini, G. Rega (*Università di Roma La Sapienza, Italy*)

17:30–18:30 – Coffee

Monday, June 30, 15:00–17:30
Room 2

Mini-Symposium "Asymptotic Methods-I"
Organizers: Igor Andrianov (*Germany*), **Jan Awrejcewicz** (*Poland*), **Leonid Manevitch** (*Russia*)

Session MoP2
Chair: Jan Awrejcewicz (*Poland*)

15:00–15:30
Energy exchange in weakly coupled FPU chains
L. Manevich, V. Smirnov (*Semenov Institute of Chemical Physics, Russia*)

15:30–16:00
Targeted energy transfer in a system with soft nonlinearity
O. V. Gendelman (*Technion – Israel Institute of Technology, Israel*)

16:00–16:30
Stability of coupled steady state modes at primary resonance in nonlinear 2DOF systems with close natural frequencies
A. I. Manevich (*Dniepropetrovsk National University, Ukraine*)

16:30–17:00
On a reformulation of the multiple scales perturbation method for difference equations
W.T. van Horssen (*Delft University of Technology, The Netherlands*)

17:00–17:30
Using WKB method for solving the problem of the stability of slowly diverging jet flows
P. S. Landa (*Lomonosov Moscow State University, Russia*)

17:30–18:30 – Coffee

Monday, June 30, 15:30–18:00
Room 3

Mini-Symposium "Resonant Problems in Slow-Fast Systems-I"
Organizers: Anatoly Neishtadt (*Russia, UK*), **Ferdinand Verhulst** (*The Netherlands*)

Session MoP3, "Regular Dynamics in Resonant Slow-Fast Systems"
Co-Chairs: Anatoly Neishtadt (*Russia, UK*), **Ferdinand Verhulst** (*The Netherlands*)

15:30–16:00
Efficient capture of nonlinear oscillations into resonance
L. Friedland (*Hebrew University, Israel*)

16:00–16:30
Autoresonance phenomenon in magnetization of weak ferromagnetics
L. A. Kalyakin, E. M. Maslov, M. A. Shamsutdinov (*Russia*)

16:30–17:00
The autoresonance threshold in a system of weakly coupled oscillators
S. Glebov (*Ufa State Petroleum Technical University, Russia*), **O. Kiselev** (*Institute of Math. USC RAS, Russia*), **V. Lazarev** (*Ufa State Petroleum Technical University, Russia*)

17:00–17:30
Efficient targeted energy transfer in coupled nonlinear oscillators through 1:1 transient resonance captures
T. Sapsis (*Massachusetts Institute of Technology, USA*), **D. Dane Quinn** (*The University of Akron, USA*), **O. Gendelman** (*Technion–Israel Institute of Technology, Israel*), **A. Vakakis** (*National Technical University of Athens, Greece; University of Illinois at Urbana-Champaign, USA*), **L. Bergman** (*University of Illinois at Urbana-Champaign, USA*), **G. Kerschen** (*Université de Liège, Belgium*)

17:30–18:00
Regimes of harmonically forced linear oscillator with attached nonlinear energy sink near the main resonance
Yu. Starosvetsky, O. Gendelman (*Technion – Israel Institute of Technology, Israel*)

18:00–18:30 – Coffee

Monday, June 30, 15:30–18:00
Room 4

Mini-Symposium "Engineering Applications-I"
Organizers: Marian Wiercigroch (*UK*), **Alexander Fidlin** (*Germany*)

Session MoP4 "Drive train dynamics"
Co-Chairs: Alexander Fidlin (*Germany*)

15:30–16:00
On the radial dynamics of friction discs
A. Fidlin, W. Stamm (*LuK GmbH & Co. oHG, Germany*)

16:00–16:30
Radial dynamics of rigid friction disks with alternating sticking and sliding
W. Stamm, A. Fidlin (*LuK GmbH & Co. oHG, Germany*)

16:30–17:00
Contact interactions in the problem of tooth chain transmission dynamics
Yu. G. Ispolov, S. G. Orlov (*St. Petersburg State Polytechnical University, Russia*)

17:00–17:30
Vibration of multi-stage gear drives influenced by nonlinear couplings
M. Byrtus, V. Zeman (*University of West Bohemia, Czech Republic*)

17:30–18:00
Nonlinear vibrations and backlashes diagnostics in the rolling mills drive trains
P. Krot (*Iron & Steel Institute NAS of Ukraine, Ukraine*)

18:00–18:30 – Coffee

Monday, June 30, 15:00–17:30
Room 5

Mini-Symposium "Control of Chaos-I"
Organizers: Heinz G. Schuster (*Germany*), **Eckehard Schöll** (*Germany*)

Session MoP5
Co-Chairs: Heinz G. Schuster (*Germany*), **Eckehard Schöll** (*Germany*)

15:00–15:30
Beyond the odd number limitation of time-delayed feedback control
E. Schöll (*Institut für Theoretis*che Physik, *TU Berlin, Germany*), **B. Fiedler** (*Institut für Mathematik, FU Berlin, Germany*), **V. Flunkert** (*Institut für Theoretis*che Physik, *TU Berlin, Germany*), **M. Georgi** (*Institut für Mathematik, FU Berlin, Germany*), **P. Hövel** (*Institut für Theoretis*che Physik, *TU Berlin, Germany*)

15:30–16:00
Time-delayed feedback control: qualitative promise and quantitative constraints
B. Fiedler (*Institut für Mathematik, Germany*)

16:00–16:30
Chaos control by time-delayed feedback with an unstable control loop
K. Höhne, H. Benner (*Institut für Festörperphysik, Germany*), **H. Shirahama** (*Ehime University, Japan*), **W. Just** (*University of London, UK*)

16:30–17:00
Patterns of chaos synchronization
W. Kinzel (*University of Würzburg, Germany*), **I. Kanter** (*Bar-Ilan University, Israel*), **J. Kestler** (*University of Würzburg, Germany*), **E. Kopelowitz** (*Bar-Ilan University, Israel*)

17:00–17:30
Control of cardiac alternans in a model of Purkinje fiber
R. O. Grigoriev, A. Garzon (*Georgia Institute of Technology, USA*)

17:30–18:30 – Coffee

Monday, June 30, 17:00–18:30
Rooms 8, 9

POSTER SESSION
Moderator:

Section: Applications in Physics and Nanomechanics

Diagnostics nonlinear dynamic systems on the base of generalized multimode models
V. V. Afanas'ev, M. P. Danilaev, U. E. Polskiy (*Tupolev Kazan State Technical University , Russia*)

Magnetoelastic wave propagation in a vortex array in a superconducting layer
B. T. Maruszewski, R. Starosta, A. Drzewiecki (*Poznan University of Technology, Poland*)

On the destruction of islands of stability in a tokamak with ergodic magnetic limiter using KAM theory
A. R. Sohrabi, S. M. Jazayeri (*Iran University of Science and Technology, Iran*)

Statistics and control of chaotic atomic transport in an optical standing-wave field
V. Argonov (*Pacific Oceanological Institute RAS, Russia*)

Method of detecting unstable periodic spatio-temporal states of spatial extended chaotic systems
A. E. Hramov, A. A. Koronovskii (*Saratov State University, Russia*)

Minisymposium: Asymptotic Methods

The account of second terms in steady solution of the wing oscillation problem in supersonic gas flow
T. P. Arsent'ev, **R. G. Barantsev** (*Saint-Petersburg State University, Russia*)

Minisymposium: Control of Chaos

Chaos control in uncertain economic systems via quasi sliding mode method
H. Salarieh, A. Alasty (*National Research Institute for Science Policy (NRISP), Iran*)

Delayed feedback control of delayed chaotic systems: numerical analysis of bifurcation
N. Vasegh, A. K. Sedigh (*K. N. Toosi University of Technology, Iran*)

Multiparametrical optimal correction for chaos suppression in a family of Duffing-van der Pol oscillators
Yu. V. Talagaev (*Saratov State University Balashov Branch, Russia*), **A. F. Tarakanov** (*Borisoglebsk State Teachers Training Institute, Russia*)

Transitions to chaotic behavior of a frequency-phase lock system
V. P. Ponomarenko (*Research Institute of Applied Mathematics and Cybernetics, Russia*), **N. N. Sorokin** (*Nizhegorodsky State University after N.I. Lobachevski, Russia*)

Minisymposium: Dynamics and Optimization of Multibody Systems

Extended Kalman filter observers for multibody dynamical systems
A. Barreiro, E. Delgado (*University of Vigo, Spain*)**, J. Cuadrado, D. Dopico** (*University of La Coruña, Spain*)

Steady motions of a tetrahedral satellite with tethered elements
A. A. Burov (*Dorodnicyn Computing Center, RAS, Russia*), **A. D. Guerman** (*University of Beira Interior, Portugal*), **R. S. Sulikashvili** (*Razamadze Math. Institute GAS, Georgia*)

Minisymposium: Engineering Applications

Nonlinear-dynamic systems of confidential communication: classification, simulation, experiment
I. Izmailov, B. Poizner, I. Romanov, D. Shergin (*Tomsk State University, Russia*)

On analysis of nonlinear dynamic system of separation
M. Zelmat, M. Kidouche, A. Habbi (*University of Boumerdès, Algeria*)

Minisymposium: Hybrid Mechanical Systems

Multipendulum mechatronic set-up for studying control and synchronization
B. Andrievsky, A. L. Fradkov (*Institute for Problems of Mechanical Engineering RAS, Russia*), **K. B. Boykov** (*Corporation "Granit-7", Russia*), **B. P. Lavrov** (*Russia*)

An augmented Lagrangian based shooting method for the trajectory optimization of switched Lagrangian systems
K. Yunt (*Center of Mechanics IMES, Switzerland*)

Hybrid quantised observer for multi-input-multi-output nonlinear systems
A. L. Fradkov, B. Andrievsky (*Institute for Problems of Mechanical Engineering RAS, Russia*), **R. J. Evans** (*National ICT Australia; University of Melbourne, Australia*)

Section: Mathematical Aspects of Nonlinear Dynamics

On dynamics of double pendulum in airflow
M. Dosaev, **Yu. Seliutsky** (*Lomonosov Moscow State University, Russia*)

Some amazing phenomena in stability of nonlinear dynamical systems
A. A. Zevin (*Transmag Research Institute, Academy of Sciences of Ukraine, Ukraine*)

Minisymposium: Micro- and Nano- Electro-Mechanical Systems

Buckling and non-linear vibrations of a MEMS biosensor
O. Thomas (*CNAM – Structural Mechanics and Coupled System Lab., France*), **L. Nicu, C. Ayela** (*CNRS – Laboratoire d'Analyse et Architecture des Systèmes, France*), **C. Touzé** (*ENSTA Unité de Mécanique, France*)

Nonlinear model of microtubule dynamics and its impact on kinesin motion
M. V. Satarić (*University of Novi Sad, Serbia*), **S. Zdravković** (*University of Priština, Kosovska Mitrovica, Serbia*)

Section: Nonlinear Control

A control solution for the inverse pendulum on a cart problem
R. Bălan, V. Mătieş, O. Hancu, S. Stan, T. Vlad (*Technical University of Cluj-Napoca, Romania*)

Controlled excitation of the optical mode in a coupled chain
E. L. Aero, A. L. Fradkov, B. Andrievsky (*Institute for Problems of Mechanical Engineering RAS, Russia*)

Control of mechanical oscillations for magnetostrictive actuator
P. A. Shavrin, S. A. Kochetkov, S. A. Kiselyov (*Togliatti State University, Russia*)

Control of stability of nonlinear elastic pendulum
P. Pokorny (*Prague Institute of Chemical Technology, Czech Republic*)

Design and stability of adaptive switched system
O. Shpilevaya (*Novosibirsk State Technical University, Russia*)_

Mathematical models of radio-telescope metallic structure as a controlled plant
V. G. Gimmelman (*State Enterprise Design Bureau of Special Mechanical Engineering, Russia*), **V. V. Dubarenko, V. A. Konoplev, A. Yu. Kuchmin** (*Institute of Problems of Mechanical Engineering RAS, Russia*)

On stable solutions of time-delay system containing hysteresis nonlinearities
A. Stepanov (*Saint Petersburg State University, Russia*)

On the control of chaos in Rayleigh- Bénard convection in Maxwellian fluids using backstepping design
H. Sadeghian, S. Shahsavari, A. Alasty (Sharif University of Technology, Iran)

Robust output one ahead model predictive control design
V. Veselý, D. Rosinová (*Slovak University of Technology, Slovak Republic*)

Synthesis of robust stabilizing control for nonlinear systems
I. E. Zuber, A. Kh. Gelig (*Saint Petersburg State University, Russia*)

Consistent measures of dependence as a tool of eliciting non-linear features in complex systems (mildly formalized system identification)
K. Chernyshov (*V.A. Trapeznikov Institute of Control Sciences, Russia*)

Minisymposium: Nonlinear Dynamics and Characterization of Distributed-Parameter Systems

Calculation of the defects interaction force with the Ritz method
A. K. Abramyan, S. A. Vakulenko (*Institute of Problems of Mechanical Engineering RAS, Russia*)

Minisymposium: Nonlinear Stochastic Systems

Imperfect stochastic synchronization of the near wall turbulence
S. Tardu (*Laboratoire des Ecoulements Géophysiques et Industriels, France*)

Minisymposium: Nonlinear Vibrations and Applications

Experimental investigating of non-linear and chaotic behavior of a doubly-clamped beam under electromagnetic excitation
Z. Mohammadi, A. M. Mashat, H. Salarieh, M. Abediny, M. M. Haghighi, A. Alasty (*Sharif University of Technology, Iran*), **R. Shabani** (*Urmia University, Iran*)

Independent component analysis of non-stationary oscillations due to rotor blade flutter
B. Kukharenko (*Mechanical Engineering Research Institute RAS, Russia*)

Nonlinear oscillations of flexible vertical gyroscopic rotors
M. F. Zeitman (*Mechanical Engineering Research Institute RAS, Russia*)

Optimization methods for spur gear dynamics
M. Barbieri, G. Scagliarini, G. Bonori, F. Pellicano, G. Bertacchi (*Univ.of Modena and Reggio Emilia, Italy*)

Stability of elastic elements of thin-shelled constructions under aerohydrodynamic action
P. A. Velmisov, A. V. Ankilov (*Ulyanovsk State Technical University, Russia*)

Stability of one-dimensional nonlinear hereditary system
B. Sh. Usmonov (*Tashkent State Institute of aviation, Uzbekistan*)

Slow oscillations of the unbalanced vibroexciters' rotors when perturbing the self-synchronization regimes
M. Potapenko (*Institute of Problems of Mechanical Engineering RAS, Russia*)

TUESDAY, JULY 1

Tuesday, July 1, 9:30–11:10
Room 1

Mini-Symposium "Fractional Derivatives and Their Applications-I"
Organizers: José Tenreiro Machado (*Portugal*)**, Alexander Belyaev** (*Russia*)**, Om Prakesh Agrawal** (*USA*)

Session TuA1, "Application of Fractional Derivatives in Physics and Engineering"
Co-chairs: José Tenreiro Machado (*Portugal*)**, Alexander Belyaev** (*Russia*)

9:30–9:50
The observation of the fractional kinetics in dielectric relaxation: New indicators of the collective motions
R. Nigmatullin (*Kazan State University, Russia*)

9:50–10:10
Fractional modelling of the electrical conduction in NaCl electrolyte
I. S. Jesus, J. A. Tenreiro Machado, R. S. Barbosa (*Institute of Engineering of Porto, Portugal*)

10:10–10:30
Application of a mathematical apparatus of fractional derivatives in problems of statistical dynamics of computer networks
A. Gorodetskiy, V. Zaborovsky, I. Zavaley, V. Mulukha (*Saint Petersburg Politechnical University, Russia*)

10:30–10:50
Axis-symmetric fractional diffusion-wave problem: Part I – analysis
N. Özdemir (*Balikesir University, Turkey*), **O. P. Agrawal** (*Southern Illinois University, USA*), **D. Karadeniz, B. B. İskender** (*Balikesir University, Turkey*)

10:50–11:10
On fractional Fourier analysis in ultra-distributional set-up and image processing
B. N. Bhosale (*University of Mumbai, India*)

11:10–11:50 – Coffee

Tuesday, July 1, 9:30–11:10
Room 2

Mini-Symposium "Hybrid Mechanical Systems-I"
Organizers: Gennady A. Leonov (*Russia*)**, Henk Nijmeijer** (*The Netherlands*)

Session TuA2
Co-chairs: Gennady A. Leonov (*Russia*)**, Henk Nijmeijer** (*The Netherlands*)

9:30–9:50
Computation of Lyapunov quantities for Lienard equation
N. V. Kuznetsov, G. A. Leonov (*Saint-Petersburg State University, Russia*)

9:50–10:10
A discrete-time hybrid Lurie type system with strange hyperbolic nonstationary attractor
V. Belykh, B. Ukrainsky (*Volga State Academy of Water Transport, Russia*), **H. Nijmeijer, A. Pogromsky** (*Eindhoven University of Technology, The Netherlands*)

10:10–10:30
Hybrid control for motion systems with improved disturbance rejection
M. Heertjes (*ASML, Mechatronic Systems Development, The Netherlands*), **X. Schuurbiers**, **H. Nijmeijer** (*Eindhoven University of Technology, The Netherlands*)

10:30–10:50
Hybrid control of underactuated systems with discontinuous friction
R. Martinez (*Universidad Autónoma de Zacatecas, México*), **J. Alvarez**, **Yu. Orlov** (*CICESE, México*)

10:50–11:10
Steady-state vibration mitigation in a piecewise beam system using PD control
R. H. B. Fey, H. Nijmeijer (*Eindhoven University of Technology, The Netherlands*), **R. M. T. Wouters** (*YACHT BV, The Netherlands*)

11:10–11:50 – Coffee

Tuesday, July 1, 9:30–11:30
Room 3

Mini-Symposium "Reduced-Order Modeling-I"
Organizers: Hans Troger (*Austria*)**, Alexander Vakakis** (*Greece, USA*)
Session TuA3, "Analytical and Numerical Methods"
Co-chairs: Hans Troger (*Austria*)**, Alexander Vakakis** (*Greece, USA*)

9:30–9:50
Periodic steady state response of a large scale city bus model with nonlinear characteristics
C. Theodosiou, G. Georgiou, S. Natsiavas (*Aristotle University, Greece*)

9:50–10:10
Normal form reduction for multiple-zero eigenvalues using fractional scale
A. A. Mailybaev (*Moscow State Lomonosov University, Russia*), **A. Luongo** (*Universitμa di L'Aquila, Italia*)

10:10–10:30
Dynamics and simulation of the simplest model of a skateboard
A. V. Kremnev, A. S. Kuleshov (*Moscow State University, Russia*)

10:30–10:50
Order reduction of nonlinear delay-differential equations with periodic coefficients
E. A. Butcher (*New Mexico State University, USA*)

10:50–11:10
The Chelomei problem: High or low frequency stabilization?
A. A. Seyranian (*MSTU n.a.Bauman, Russia*), **A. P. Seyranian** (*MSU n.a.Lomonosov, Russia*)

11:10–11:30
Dimension reduction: A key concept in dynamics
A. Steindl, H. Troger (*Technische Universität Wien, Austria*)

11:30–11:50 – Coffee

Tuesday, July 1, 9:30–11:10
Room 4

Section "Applications in Physics and Nanomechanics-I"

Session TuA4, "Application in Optics and Molecular Physics"
Chair: Alexey Porubov (*Russia*)

9:30–9:50
Analysis of Lyapunov control for Hamiltonian quantum systems
X. Wang (*University of Cambridge, UK*), **S. Schirmer** (*University of Cambridge, UK; University of Kuopio, PO Box 1627, 70211 Kuopio, Finland*)

9:50–10:10
Feedforward control for two-level atom in modulated optical field
Saifullah (*Government College University, Pakistan*), **S. Borisenok** (*Herzen State Pedagogical University, Russia*)

10:10–10:30
The effect of ion temperature on large amplitude ion-acoustic waves in non-isothermal plasma
H. Alinejad (*Babol University of Technology, Iran*), **S. Sobhanian** (*Tabriz University, Iran*)

10:30–10:50
The thermodynamic characteristics of the systems with nonlinear pairwise interactions
Yu. Pykh (*Russia*)

11:10–11:50 – Coffee

Tuesday, July 1, 9:30–11:30
Room 5

Section "Mathematical Aspects of Nonlinear Dynamics-I"

Session TuA5, "Stability and Instability"
Chair: Viktor Pliss (*Russia*)

9:30–9:50
Absolute observation stability for evolutionary varitional inequalities
G. A. Leonov, V. Reitmann (*Saint-Petersburg State University, Russia*)

9:50–10:10
Chaotic sampling, very weakly coupling, and chaotic mixing: three simple synergistic mechanisms to make new families of chaotic pseudo random number generators
R. Lozi (L*aboratoire J.A. Dieudonné, University of Nice-Sophia-Antipolis, France*)

10:10–10:30
Topological semi-conjugacy and chaotic mappings
I. Bula (*University of Latvia, Latvia*)

10:30–10:50
Structural stability and bifurcations in analytical differential systems
A. L. Khalin (*Moscow State University, Russia*)

10:50–11:10
On one variant of the comparison method for conservative systems
V. D. Irtegov (*Institute of Systems Dynamics and Control Theory RAS, Russia*)

11:10–11:30
State variables scaling to solve the Malkin's problem on periodic oscillations in perturbed autonomous systems
M. Kamenskii, O. Makarenkov (*Voronezh State University, Russia*), **P. Nistri** (*Università di Siena, Italy*)

11:30–11:50 – Coffee

Tuesday, July 1, 9:30–11:30
Room 6

Mini-Symposium "Nonlinear Vibrations and Applications-I"
Organizers: Ilya Blekhman (Russia), **Jon Juel Thomsen** (*Denmark*)

Session TuA6, "Vibration Suppression and Isolation"
Co-Chairs: Ilya Blekhman (Russia), **Jon Juel Thomsen** (*Denmark*)

9:30–9:50
Optimization of non-linear mass damper parameters for transient response
J. S. Jensen, B. S. Lazarov (*Technical University of Denmark, Denmark*)

9:50–10:10
Dynamical damping of parametric oscillations of a flexible rod
A. Gouskov, E. Myalo, G. Panovko (*Blagonravov Mechanical Engineering Research Institute of the RAS, Russia*)

10:10–10:30
Force transmissibility of a nonlinear vibration isolatorwith high-static-low-dynamic-stiffness
A. Carrella (*University of Bristol, UK*), **M. J. Brennan, T.P. Waters** (*University of Southampton, UK*)

10:30–10:50
Dynamics of essentially nonlinear vibration absorber coupled to harmonically excited 2 DOF system
Yu. Starosvetsky, O. Gendelman (*Technion – Israel Institute of Technology, Israel*)

10:50–11:10
Systems with quasi-zero-stiffness characteristic
A. N. Zotov (*Ufa State Petroleum Technical University, Russia*)

11:10–11:30
Vibration suppression of a cantilever beam by open-loop control of an attached stiffness element
B. Petermeier, H. Ecker (*Vienna University of Technology, Austria*)

11:30–11:50 – Coffee

Tuesday, July 1, 9:30–11:30
Room 7

Mini-Symposium "Fundamental and Computational Aspects of Non-Smooth Systems-I"
Organizers: Claude Lamarque (*France*)**, Remco Leine** (*Switzerland*)

Session TuA7, "Numerical Analysis and Chaos"
Co-Chairs: Claude Lamarque (*France*)**, Remco Leine** (*Switzerland*)

9:30–9:50
Numerical simulation of nonsmooth systems and switching control with the SICONOS/Control Toolbox
V. Acary, C.-I. Morărescu, F. Pérignon, B. Brogliato (*INRIA, France*)

9:50–10:10
Comparison of non-standard finite difference methods for vibro-impact systems
Y. Dumont (*University of Reunion island, France*), **J. M.-S Lubuma** (*University of Pretoria, South Africa*)

10:10–10:30
Dynamics of finite element mechanical models with unilateral contacts and friction
C. Theodosiou, A. Iakovidis, S. Natsiavas (*Aristotle University, Greece*)

10:30–10:50
Is chaos a route to collapse?
N. Challamel (*INSA de Rennes – LGCGM, France*), **G. Pijaudier-Cabot** (*ISA BTP, France*)

10:50–11:10
Crises cascades within robust chaos in piecewise-smooth maps
V. Avrutin, M. Schanz (*University of Stuttgart, Germany*)

11:10–11:30
Bifurcations from phase-locked dynamics to chaos in a piecewise-linear map
Zh. T. Zhusubaliyev (*Kursk State Technical University, Russia*), **E. Mosekilde** (*The Technical University of Denmark, Denmark*), **Soma De, S. Banerjee** (*Indian Institute of Technology, India*)

11:30–11:50 – Coffee

Tuesday, July 1, 11:50–13:10
Room 1

Mini-Symposium "Fractional Derivatives and Their Applications-II"
Organizers: José Tenreiro Machado (*Portugal*)**, Alexander Belyaev** (*Russia*)**, Om Prakesh Agrawal** (*USA*)

Session TuM1, "Application of Fractional Derivatives in Control"
Co-chairs: José Tenreiro Machado (*Portugal*)**, Alexander Belyaev** (*Russia*)

11:50–12:10
A new method for approximating fractional derivatives: application in non-linear control
J. A. Tenreiro Machado, A. M. S. Galhano (*Polytechnic Institute of Porto, Portugal*)

12:10–12:30
Application of fractional algorithms in the control of a twin rotor multiple input-multiple output system
J. Coelho, R. Matos Neto, C. Lebres, V. Santos, N. M. Fonseca Ferreira (*Polytechnic Institute of Coimbra, Portugal*), **E. J. Solteiro Pires** (*University of Trás-os Montes e Alto-Douro, Portugal*), **J. A. Tenreiro Machado** (*Polytechnic Institute of Porto, Portugal*)

12:30–12:50
Fractional PI^{λ} controller for fractional order linear systems with input hysteresis
N. Özdemir, B. B. İskender (*Balikesir University, Turkey*)

12:50–13:10
Stability preservation problem in the methods that find rational approximation of fractional order systems
M. S. Tavazoei, M. Haeri, M. Siami, S. Bolouki (*Sharif University of Technology, Iran*)

13:30–15:00 – Lunch

15:00–15:20 – Coffee

Tuesday, July 1, 11:50–13:30
Room 2

Mini-Symposium "Hybrid Mechanical Systems-II"
Organizers: Gennady A. Leonov (*Russia*)**, Henk Nijmeijer** (*The Netherlands*)

Session TuM2
Co-chairs: Gennady A. Leonov (*Russia*)**, Henk Nijmeijer** (*The Netherlands*)

11:50–12:10
Synchronization between coupled oscillators: An experimental approach
D. Rijlaarsdam, A. Yu. Pogromsky, H. Nijmeijer (*Eindhoven University of Technology, The Netherlands*)

12:10–12:30
Control of mechanical systems with constraints: Two pendulums case study
M. S. Ananyevskiy (*Saint Petersburg State University, Russia*), **A. L. Fradkov** (*Institute for Problems of Mechanical Engineering of RAS, Russia*), **H. Nijmeijer** (*Eindhoven University of Technology, The Netherlands*)

12:30–12:50
Two Van der Pol-Duffing oscillators with Huygens coupling
V. N. Belykh, E.V. Pankratova (*Volga State Academy, Russia*), **A. Yu. Pogromsky, H. Nijmeijer** (*Eindhoven University of Technology, The Netherlands*)

12:50–13:10
Synchronization of diffusively coupled electronic Hindmarsh-Rose oscillators
E. Steur, R. Kodde, H. Nijmeijer (*Eindhoven University of Technology, The Netherlands*)

13:10–13:30
Frequency domain performance analysis of marginally stable LTI systems with saturation
R. A. van den Berg, A. Yu. Pogromsky, J. E. Rooda (*Eindhoven University of Technology, The Netherlands*)

13:30–15:00 – Lunch

15:00–15:20 – Coffee

Tuesday, July 1, 11:50–13:30
Room 3

Mini-Symposium "Reduced-Order Modeling-II"
Organizers: Hans Troger (*Austria*)**, Alexander Vakakis** (*Greece, USA*)

Session TuM3, "Nonlinear Normal Modes"
Co-chairs: Hans Troger (*Austria*)**, Alexander Vakakis** (*Greece, USA*)

11:50–12:10
Reduced-order modeling of strongly nonlinear modal interactions through slow-fast partition of the dynamics and empirical mode decomposition
S. Tsakirtzis (*National Technical University of Athens, Greece*), **Y. S. Lee** (*University of Illinois, Urbana-Champaign, USA*), **A. F. Vakakis** (*National Technical University of Athens, Greece*), **D. M. McFarland** (*University of Illinois, Urbana-Champaign, USA*)

12:10–12:30
Nonlinear normal modes in homogeneous system with time delays
O. V. Gendelman (*Technion – Israel Institute of Technology, Israel*)

12:30–12:50
Nonlinear model reduction for inertially coupled nonlinear elastic structures
F. Wang, A. K. Bajaj (*Purdue University, USA*)

12:50–13:10
Type of non-linearity of damped imperfect plates using non-linear normal modes
C. Touzé, C. Camier (*ENSTA-Unité de Mécanique (UME), France*)**, O. Thomas** (*CNAM-Structural Mechanics and coupled systems Laboratory, France*)

13:10–13:30
Regular and chaotic dynamics of the swing
A. O. Belyakov, A. P. Seyranian (*Moscow State Lomonosov University, Russia*), **A. Luongo** (*Universita di L'Aquila, Italy*)

13:30–15:00 – Lunch

15:00–15:20 – Coffee

Tuesday, July 1, 11:50–13:10
Room 4

Section "Applications in Physics and Nanomechanics-II"

Session TuM4, "Application in Physics of Chaotic Systems"
Chair: Alexey Porubov (*Russia*)

11:50–12:10
Investigation of nonlinear dynamics of electron beam instability in three-dimensional periodical structures
S. Sytova (*Belarusian State University, Belarus*)

12:10–12:30
Experimental and theoretical study of chaotic microwave signal generation in electron system with virtual cathode
E. Egorov, R. Filatov, A. Hramov, Yu. Kalinin, A. Koronovskii, S. Kyrkin, I. Rempen (*Saratov State University, Russia*)

12:30–12:50
Synchronization in network of Pierce diodes
A. E. Filatova, A. E. Hramov, A. A. Koronovskii (*Saratov State University, Russia*)**, S. Boccaletti** (*CNR– Istituto dei Sistemi Complessi Via Madonna del Piano, Italy; The Italian Embassy in Tel Aviv, Israel*)

12:50–13:10
Incomplete noise-induced synchronization in Ginzburg–Landau equation
A. E. Hramov, A. A. Koronovskii, P. V. Popov (*Saratov State University, Russia*)

13:30–15:00 – Lunch

15:00–15:20 – Coffee

Tuesday, July 1, 11:50–13:30
Room 5

Section "Mathematical Aspects of Nonlinear Dynamics-II"

Session TuM5, "Numerical Methods and Modeling"
Chair: Viktor Pliss (*Russia*)

11:50–12:10
On the application of a linear programming method to the evaluation of the entropy of a symbolic image
N. Ampilova, E. Petrenko (*SPbGU, Russia*)

12:10–12:30
Numerical research of the concrete dynamic systems by methods of pattern recognition and statistical modelling
Yu. I. Neimark, I. S. Gel'fer, I. V. Kotel'nikov, L. G. Teklina (*Nizhni Novgorod State University, Russia*)

12:30–12:50
Bounding a domain containing all compact invariant sets of the system modelling the Rayleigh-Bénard convection: The symmetry-based approach
A. Krishchenko (*Bauman Moscow State Technical University, Russia*), **K. Starkov** (*CITEDI, IPN, Mexico*)

12:50–13:10
Computation of nonlinear normal modes, part I: Numerical continuation in MATLAB
M. Peeters, R. Viguié, G. Sérandour, G. Kerschen, J. C. Golinval (*University of Liège, Belgium*)

13:10–13:30
Computation of nonlinear normal modes, part II: Numerical continuation in AUTO
G. Sérandour, M. Peeters, G. Kerschen, J. C. Golinval (*University of Liège, Belgium*)

13:30–15:00 – Lunch

15:00–15:20 – Coffee

Tuesday, July 1, 11:50–13:30
Room 6

Mini-Symposium "Nonlinear Vibrations and Applications-II"
Organizers: Ilya Blekhman (Russia), **Jon Juel Thomsen** (*Denmark*)

Session TuM6, "Averaged Systems: Effective Properties, Fast & Slow Motions, Dynamic Materials"
Co-Chairs: Ilya Blekhman (Russia), **Jon Juel Thomsen** (*Denmark*)

11:50–12:30
Mathematical analysis of the energy concentration in waves travelling through a rectangular material structure in space-time
K. Lurie (*Worcester Polytechnic Institute, USA*), **D. Onofrei** (*Rutgers University, USA*)

12:30–12:50
Phenomenon of inversion of the stable states of 'gas – fluid – "heavy" particles' system in the vibrating vessels
I. Blekhman, L. Blekhman, L. Vaisberg, V. Vasilkov, K. Yakimova (*IPME RAS and Mekhanobr –Tekhnika Corp., Russia*)

12:50–13:10
Using strong nonlinearity and high-frequency vibrations to control effective mechanical stiffness
J. Juel Thomsen (*Technical University of Denmark, Denmark*)

13:10–13:30
Transformation of equations of coupled rotators to the standard form and study of their dynamical properties using the method of averaging
N. N. Verichev (*A.A. Blagonravov, Mechanical Engineering Institute, RAS, Russia*), **S. N. Verichev** (*Delft University of Technology, The Netherlands; Schlumberger, Tyumen Product Center, Russia*), **V. I. Erofeyev** (*A. A. Blagonravov Mechani-cal Engineering Institute, RAS, Russia*)

13:30–15:00 – Lunch

15:00–15:20 – Coffee

Tuesday, July 1, 11:50–13:10
Room 7

Mini-Symposium "Fundamental and Computational Aspects of Non-Smooth Systems-II"
Organizers: Claude Lamarque (*France*)**, Remco Leine** (*Switzerland*)

Session TuM7, "Stability & Control of Nonsmooth Systems"
Co-Chairs: Claude Lamarque (*France*)**, Remco Leine** (*Switzerland*)

11:50–12:10
Tracking control of nonsmooth Lagrangian systems with time constraints
I.-C. Morărescu, **B. Brogliato** (*INRIA, BIPOP Research Team, France*)

12:10–12:30
Convergence properties of monotone measure differential inclusions
N. van de Wouw (*Eindhoven University of Technology, The Netherlands*), **R. I. Leine** (*Institute of Mechanical Systems, ETH Zurich, Switzerland*)

12:30–12:50
A stability conjecture for discrete systems with unilateral contact and dry friction
A. Léger, E. Pratt, M. Jean (*Laboratoire de Mécanique et d'Acoustique, CNRS, France*)

12:50–13:10
Stability of periodic solutions in Lipschitz systems with a small parameter
A. Buică (Babeş–Bolyai University, Romania), **J. Llibre** (Universitat Autònoma de Barcelona, Spain), **O. Yu. Makarenkov** (Voronezh State University, Russia)

13:30–15:00 – Lunch

15:00–15:20 – Coffee

Tuesday, July 1, 15:20–16:40
Room 1

Mini-Symposium "Fractional Derivatives and Their Applications-III"
Organizers: José Tenreiro Machado (*Portugal*)**, Alexander Belyaev** (*Russia*)**, Om Prakesh Agrawal** (*USA*)

Session TuP1, "Numerical and Theoretical Aspects of Calculation of Fractional Derivatives"
Co-chairs: José Tenreiro Machado (*Portugal*)**, Alexander Belyaev** (*Russia*)

15:20–15:40
Numerical calculation of fractional derivatives of non-smooth data
J. A. Tenreiro Machado, A. M. S. Galhano (*Institute of Engineering of Porto, Portugal*)

15:40–16:00
The initial conditions of Riemann-Liouville and Caputo derivatives
M. D. Ortigueira, F. J. Coito (*UNINOVA and DEE of Faculdade de Ciências e Tecnologia da UNL, Portugal*)

16:00–16:20
G-Meijer functions series as solutions for some Euler-Lagrange equations of fractional mechanics
M. Klimek (*Czestochowa University of Technology, Poland*)

16:20–16:40
Generalizing Grünwald–Letnikov's formulas for fractional derivatives
M.-C. Néel, M. Joelson (*University of Avignon, France*)

Tuesday, July 1, 15:20–17:20
Room 2

Mini-Symposium "Micro- and Nano- Electro-Mechanical Systems"
Organizers: Oded Gottlieb (*Israel*), **Steve Shaw** (*USA*)

Session TuP2
Co-chairs: Oded Gottlieb (*Israel*), **Steve Shaw** (*USA*)

15:20–15:40
Theoretical and experimental nonlinear dynamics of a clamped-clamped beam MEMS resonator
R. M. C. Mestrom, R. H. B. Fey, H. Nijmeijer (*Eindhoven University of Technology, The Netherlands*)

15:40–16:00
Utilizing period-doubling bifurcations to locate grazing in atomic force microscopy
A. J. Dick (*Rice University, USA*), **S. D. Solares** (*University of Maryland, USA*)

16:00–16:20
Impact dynamics of MEMS gear teeth
S. Theodossiades (*Loughborough University, UK*), **M. Teodorescu** (*Cranfield University, Cranfield, UK*), **H. Rahnejat** (*Loughborough University, UK*)

16:20–16:40
Nonlinear internal resonances of a microbeam array near the pull-in point
S. Gutschmidt, O. Gottlieb (*Technion – Israel Institute of Technology, Israel*)

16:40–17:00
Analysis of a novel MEMs gyroscope actuated by parametric resonance
N. J. Miller, S. W. Shaw (*Michigan State University, USA*), **L. A. Oropeza-Ramos, K. L. Turner** (*University of California, Santa Barbara, USA*)

17:00–17:20
Nonlinear dynamics of a piezoelectrically-actuated microcantilever sensor
S. Nima Mahmoodi, N. Jalili, M. F. Daqaq (*Clemson University, USA*)

Tuesday, July 1, 15:20–17:00
Room 3

Mini-Symposium "Reduced-Order Modeling-III"
Organizers: Hans Troger (*Austria*), **Alexander Vakakis** (*Greece, USA*)

Session TuP3, "Continuous and Stochastic Systems"
Co-chairs: Hans Troger (*Austria*), **Alexander Vakakis** (*Greece, USA*)

15:20–15:40
Stochastic Models for Selected Slow Variables in Large Deterministic Systems

A. J. Majda (*New York University, USA*), **I. Timofeyev** (University of Houston, USA), **E. Vanden-Eijnden** (*New York University, USA*)

15:40–16:00
The Hertz contact problem and its volumetric reduction with computational applications
V. Vilke (*Lomonosov Moscow State University, Russia*), **I. Kosenko**, **E. Aleksandrov** (*Russian State University of Tourism and Service, Russia*)

16:00–16:20
Reduced order model for the nonlinear vibration analysis of a pressure loaded cylindrical shell
P. B. Gonçalves, F. M. A. da Silva (*Catholic University, Brazil*), **Z. J. G. N. Del Prado** (*Federal University of Goiás, Brazil*)

16:20–16:40
Reduced-order modeling of electrostatically-actuated micro-beams
F. Durieu, O. Brüls, V. Rochus, G. Sérandour, J.-C. Golinval (*University of Liège, Belgium*)

16:40–17:00
Inertial particle's motion in geophysical fluid flows
Th. Sapsis, G. Haller (*Massachusetts Institute of Technology, USA*)

Tuesday, July 1, 15:20–17:20
Room 4

Section “Applications in Physics and Nanomechanics-III”

Session TuP4, “Application in Biology and Fluid Dynamics”
Chair: Alexey Porubov (*Russia*)

15:20–15:40
Solitonic mode in DNA dynamics and impact of viscosity
S. Zdravković (*Univerzitet u Prištini, Srbija*), **M. V. Satarić** (*Univerzitet u Novom Sadu, Srbija*)

15:40–16:00
About variety of transition to chaos in some hydrodynamical systems with limited power-supply
A. Shvets (*NTU of Ukraine “Kiev Polytechnical Institute”, Ukraine*), **T. Krasnopolskaya** (*Institute of a hydromechanics of the National Academy of Sciences, Ukraine*)

16:00–16:20
Oscillatory modes of solutocapillary marangoni convection at a drop-liquid interface

R. Birikh, R. Rudakov (*Perm State Pedagogical University, Russia*), **K. Kostarev, A. Zuev** (*Institute of Continuous Media Mechanics, Ural Branch of RAS, Russia*)

16:20–16:40
Strange attractors in simplest models of the biological populations number dynamics
E. Ya. Frisman (*Complex Analysis of Regional Problems Institute, Russia*), **O. L. Zdanova** (*Institute for Automation and Control Processes, Russia*)

16:40–17:00
Dynamics modes of a number in density-dependent two-age-structured model
O. Revutskaya, **G. Neverova, E. Frisman** (*Institute for Complex Analysis of Regional Problems, Russia*)

Tuesday, July 1, 15:20–17:00
Room 5

Section "Nonlinear Control-I"

Session TuP5
Co-Chairs: Stanislav D. Zemlyakov (*Russia*), **Alexander V. Chernodarov** (*Russia*)

15:20–15:40
Adaptive robust damping of the inertial-sensor errors during integrated primary and secondary processing of signals
A. V. Chernodarov, V. A. Matyushin (*Zhukovsky Air Force Engineering Academy, Russia*)**, B. N. Gavrilin** (*Scientific Research Institute of Instrument Design, Russia*)

15:40–16:00
Adaptive tracking control for a quad-rotor
J. C. Raimúndez, A. F. Villaverde (*Universidade de Vigo, Spain*)

16:00–16:20
Dynamic systems control with symmetrization of phase limitations
V. N. Pilishkin (*Bauman Moscow State Technical University (BMSTU), Russia*), **I. H. Tollet** (*EVTEK University of Applied Sciences (EVTEK), Finland*)

16:20–16:40
Development of nonsynchronous modes in coupled systems with phase and delay control
V. P. Ponomarenko (*Research Institute of Applied Mathematics and Cybernetics, Russia*)

16:40–17:00
Computer aided symbolic modeling and precise adaptive control of complex Lagrangian systems
S. D. Zemlyakov, D. A. Krivoruchko (*Institute of Control Sciences, RAS, Russia*)

Tuesday, July 1, 15:20–17:20
Room 6

Mini-Symposium "Nonlinear Vibrations and Applications-III"
Organizers: Ilya Blekhman (Russia), **Jon Juel Thomsen** (*Denmark*)

Session TuP6, "Multibody Systems: Chained Oscillators, Molecular Dynamics, Waves"
Co-Chairs: Ilya Blekhman (Russia), **Jon Juel Thomsen** (*Denmark*)

15:20–16:00
A conspiracy of oscillators
P. G. Hjorth (*Technical University of Denmark, Denmark*)

16:00–16:20
Breather self-trapping and delocalization in 2D system of weakly coupled nonlinear chains
Yu. Kosevich, A. Savin, L. Manevitch (*Semenov Institute of Chemical Physics RAS, Russia*)

16:20–16:40
Using strong nonlinearity and high-frequency vibrations to control effective properties of discrete elastic waveguides
B. S. Lazarov, S. O. Snaeland, J. J. Thomsen (*Technical University of Denmark, Denmark*)

16:40–17:00
On dynamics of discontinuous systems with traditional and non-traditional impact pairs
V. Astashev, V. Kruhenin (*Mechanical Engineering Research Institute, Russia*)

17:00-17:20
Dynamics of a bush-shaft system with impact and friction
Jan Awrejcewicz, Yu. Pyryev (Technical University of Łódź, Poland)

Tuesday, July 1, 15:20–17:00
Room 7

Mini-Symposium "Fundamental and Computational Aspects of Non-Smooth Systems-III"
Organizers: Claude Lamarque (*France*)**, Remco Leine** (*Switzerland*)

Session TuP7, "Applications of Nonsmooth Dynamics"
Co-chairs: Claude Lamarque (*France*)**, Remco Leine** (*Switzerland*)

15:20–15:40
Predictive simulation of impact phenomena for innovations in aircraft component design
W. Lammen, R. van Houten (*National Aerospace Laboratory NLR, The Netherlands*)

15:40–16:00
Control of bifurcations of DC/DC buck converters controlled by double-edged PWM waveform
A. Elbkosh, D. Giaouris, B. Zahawi, V. Pickert (*Newcastle University, UK*), **S. Banerjee** (*Indian Institute of Technology, India*)

16:00–16:20
Bifurcations in annulus-like parameter space of Delayed-PWM switched converter
F. Angulo, G. Olivar, J.A. Taborda (*Universidad Nacional de Colombia - Sede Manizales, Colombia*)

16:20–16:40
Pushbelt CVTs – a non-smooth challenge
T. Schindler, H. Ulbrich, F. Pfeiffer (*Technische Universität München, Germany*), **A. van der Velde, A. Brandsma** (*CVT Advanced Engineering, Van Doorne's Transmissie b.v./Bosch Group, The Netherlands*)

16:40–17:00
Structural instability induced by actuator constraints in controlled aeroelastic system
M. Demenkov (*De Montfort University, UK*)

17:00-17:20
Surface contact with friction between polyhedric discrete elements
C. Bohatier (*University of Montpellier, France)***, A. Rafiee, M. Vinches** (*Alès School of Mines, France*)

WEDNESDAY, JULY 2

Wednesday, July 2, 9:30–11:50
Room 1

Mini-Symposium "Asymptotic Methods-II"
Organizers: Igor Andrianov (*Germany*)**, Jan Awrejcewicz** (*Poland*)**, Leonid Manevitch** (*Russia*)

Session WeA1
Chair: Leonid Manevitch (*Russia*)

9:30–9:50
The passing through resonance of synchronous machine on elastic platform
G. A. Leonov (*Saint-Petersburg State University, Russia*)

9:50–10:10
Free dynamics of finite chains of weakly nonlinear oscillators
F. Romeo, **G. Rega** (*Universit`a di Roma La Sapienza, Italy*)

10:10–10:30
Transient in 2-DOF nonlinear systems
Yu. Mikhlin, **T. Bunakova, G. Rudneva, N. Perepelkin** (*National Technical University, Ukraine*)

10:30–10:50
Asymptotic model of propagation and interaction of nonlinear longitudinal waves in elastoplastic solids
N. N. Myagkov (*Institute of Applied Mechanics, RAS, Russia*)

10:50–11:10
Asymptotic method applied to the localization of vibrations in a weakened column
N. Challamel (*INSA de Rennes – LGCGM, France*)**, C. Lanos** (*IUT de Rennes – LGCGM, France*)**, C. Casandjian** (*INSA de Rennes – LGCGM, France*)

11:10–11:30
Evolution of rotation of a satellite with cavity filled with a viscous fluid relative to the centre of mass in the gravitational field
L. Akulenko (*Institute for Problems in Mechanics RAS, Russia*), **D. Leshchenko, A. Rachinskaya** (*Odessa State Academy of Civil Engineering and Architecture, Ukraine*)

11:30–11:50
Asymptotic solution and stability of autoparametrical systems
R. Starosta (*Poznan University of Technology, Poland*), **Jan Awrejcewicz** (*Technical University of Łódź, Poland*)

12:00–13:30 – Lunch

Wednesday, July 2, 9:30–11:50
Room 2

Mini-Symposium "Nonlinear Dynamics and Characterization of Distributed-Parameter Systems–I"
Organizers: Balakumar Balachandran (*USA*)**, Sotirios Natsiavas** (*Greece*)**, Fabrizio Vestroni** (*Italy*)

Session WeA2
Co-Chairs: Balakumar Balachandran (*USA*)**, Sotirios Natsiavas** (*Greece*)**, Fabrizio Vestroni** (*Italy*)

9:30–9:50
Vibration suppression of helicopter blades by pendulum absorbers (first elastic mode of the blade)
I. Nagasaka (*Chubu University, Japan)*, **Y. Ishida**, **T. Koyama** (*Nagoya University, Japan*)

9:50–10:10
Numerical analysis of a frictional impact oscillator
G. Lancioni (*Polytechnic University of Marche, Italy*), **U. Galvanetto** (*Imperial College London, UK*), **S. Lenci** (*Polytechnic University of Marche, Italy*)

10:10–10:30
What is a parametric excitation in structural dynamics?
W. Lacarbonara (*Università degli Studi di Roma La Sapienza, Italy*), **S. S. Antman** (*University of Maryland, USA*)

10:30–10:50
On the role of meta-accelerations in the evolutional dynamics and stability of weakly-dissipative solids
B. A. Smolnikov (*State Polytechnical University of St. Petersburg, Russia*), **A. K. Belyaev** (I*nstitute of Problems in Mechanical Engineering, RAS, Russia*)

10:50–11:10
Impact dynamic behaviour of meshing loaded teeth in transmission drive rattle
M. De la Cruz, S. Theodossiades, H. Rahnejat (*Loughborough University, UK*), **P. Kelly** (*Ford Werke AG, Germany*)

11:10–11:30
Viscous flows in a half space caused by tangential vibrations on its boundary
V. A. Vladimirov (*University of York, UK*)

12:00–13:30 – Lunch

Wednesday, July 2, 9:30–11:50
Room 3

Mini-Symposium "Resonant Problems in Slow-Fast Systems-II"
Organizers: Organizers: Anatoly Neishtadt (*Russia, UK*), **Ferdinand Verhulst** (*The Netherlands*)

Session WeA3, "Chaotic Dynamics in Resonant Slow-Fast Systems"
Co-Chairs: Anatoly Neishtadt (*Russia, UK*), **Ferdinand Verhulst** (*The Netherlands*)

9:30–9:50
Slow drift in a slow-fast Hamiltonian system
V. Gelfreich (*University of Warwick, UK*), **N. Brännström** (*University of Helsinki, Finland*)

9:50–10:10
Shil'nikov saddle-focus homoclinic orbits in singularly perturbed systems in dimension higher than 3
F. Battelli (*Marche Polytechnic University, Italy*), **K. J. Palmer** (*National Taiwan University, Taiwan*)

10:10–10:30
Emergent properties in an automata gas
A. Bazzani, B. Giorgini, S. Rambaldi (*University of Bologna and INFN sezione di Bologna, Italy*)

10:30–10:50
Asteroid dynamics at the 3:1 mean motion resonance with Jupiter (planar problem)
V. Sidorenko (*Keldysh Institute of Applied Mathematics, Russia*)

10:50–11:10
Resonant chaotic mixing in a cellular flow
D. L. Vainchtein (*Georgia Institute of Technology, USA; Space Research Institute, Russia*), **J. Widloski**, **R. O. Grigoriev** (*Georgia Institute of Technology, USA*)

11:10–11:30
Change in the adiabatic invariant at a separatrix crossing in a nonlinear model of feshbach resonance
A. Itin, A. Vasiliev (*Space Research Institute RAS, Russia*)

12:00–13:30 – Lunch

Wednesday, July 2, 9:30–11:10
Room 4

Mini-Symposium "Control of Chaos–II"
Organizers: Heinz G. Schuster (*Germany*)**, Eckehard Schöll** (*Germany*)

Session WeA4
Co-Chairs: Heinz G. Schuster (*Germany*)**, Eckehard Schöll** (*Germany*)

9:30–9:50
Suppressing chaos in cardiac models using overdrive pacing
L. S. Averyanova, G. V. Osipov (*University of Nizhny Novgorod, Russia*), **C. K. Chan** (*Academy Sinica, Taiwan*), **J. Kurths** (*University Potsdam, Germany*)

9:50–10:10
Resonant negative feedback for controlling chaos in the two-well nonautonomous oscillator
A. Tamaševičius, T. Pyragienė, G. Mykolaitis, S. Bumelienė (*Semiconductor Physics Institute, Lithuania*), **E. Tamaševičiūtė** (*Vilnius University, Lithuania*)

10:10–10:30
Adaptive tuning of feedback gain in time-delayed feedback control
P. Yu. Guzenko (*Saint Petersburg State Polytechnical University, Russia*), **P. Hövel, V. Flunkert** (*Institut für Theoretische Physik, Germany*), **A. L. Fradkov** (*Institute for Problems of Mechanical Engineering, RAS, Russia*), **E. Schöll** (*Institut für Theoretische Physik, Germany*)

10:30–10:50
An adaptive observer for chaotic Duffing system
S. Aranovskiy, A. Bobtsov, N. Nikolaev, A. Pyrkin, O. Slita (*Saint-Petersburg State University of Information Technologies Mechanics and Optics, Russia*)

10:50–11:10
Synchronization of chaotic systems in unidirectional ring networks with delay
T. Oguchi (*Tokyo Metropolitan University, Japan*), **H. Nijmeijer** (*Eindhoven University of Technology, The Netherlands*)

12:00–13:30 – Lunch

Wednesday, July 2, 9:30–11:30
Room 5

Mini-Symposium "Nonlinear Vibrations and Applications-IV"
Organizers: Ilya Blekhman (Russia), **Jon Juel Thomsen** (*Denmark*)

Session WeA5, "Machinery, Vibro-Devices, Control"
Co-Chairs: Ilya Blekhman (Russia), **Jon Juel Thomsen** (*Denmark*)

9:30–9:50
Modelling of autoresonant control of ultrasonic transducer for machining applications
S. Voronina, V. Babitsky, A. Meadows (*Loughborough University, UK*)

9:50–10:10
Improvement of detection of aperiodic binary signals in a noisy bistable VCSEL by vibrational resonance
V. N. Chizhevsky (*B. I. Stepanov Institute of Physics, Belarus*), **G. Giacomelli** (*Istituto dei Sistemi Complessi – CNR, Italy; Istituto Nazionale di Fisica della Materia, Italy*)

10:10–10:30
On the theory of one vibro-ram class
V. S. Metrikin (*Research Institute for Applied Mathematics and Cybernatics, Russia*)

10:30–10:50
Vibration-driven robots with movable internal masses
S. Jatsun, I. Lupehina, A. Yatsun (*Kursk State Technical University, Russia*),
K. Zimmerman, I. Zeydis (*University of Ilmenu, Germany*)

10:50–11:10
Vibroimpact motion of rotor taking into account friction at the contact
L. Banakh, A. Nikiforov, G. Panovko (*Mechanical Engineering Research Ins. RAS, Russia*)

11:10–11:30
A consideration of support asymmetry in an automatic ball balancing system
D. Rodrigues, A. Champneys, M. Friswell, E. Wilson (*University of Bristol, UK*)

12:00–13:30 – Lunch

Wednesday, July 2, 9:30–11:50
Room 6

Mini-Symposium "Fundamental and Computational Aspects of Non-Smooth Systems-IV"
Organizers: Claude Lamarque (*France*)**, Remco Leine** (*Switzerland*)

Session WeA6, "Theoretical Aspects and Modelling of Non-smooth Systems"
Co-Chairs: Claude Lamarque (*France*)**, Remco Leine** (*Switzerland*)

9:30–9:50
An existence result for vibro-impact problems in the multi-constraint case
L. Paoli (*Université Jean Monnet, France*)

9:50–10:10
A weak form of Hamilton's principle as variational inequality
R. I. Leine, U. Aeberhard (*Institute of Mechanical Systems, Switzerland*)

10:10–10:30
A finite dimensional mechanical system with a cascade of non smooth constitutive terms
J. Bastien (*Université Claude Bernard Lyon, France*)**, C. H. Lamarque** (*École Nationale des Travaux Publics de l'Etat,Vaulx-en-Velin, CNRS, France*)

10:30–10:50
Connected models of friction rolling, sliding and whirling
A. Kireenkov (*Institute for Problems in Mechanics RAS, Russia*)

10:50–11:10
Energy losses of impacts with friction
F. Pfeiffer (*Lehrstuhl fuer Angewandte Mechanik, Germany*)

11:10–11:30
Effect of large deflections during impact of inflated thin-walled spherical shell
W. J. Stronge (*University Of Cambridge, UK*)

12:00–13:30 – Lunch

Wednesday, July 2, 9:30–10:50
Room 7

Section "Nonlinear Control-II"

Session WeA7
Co-Chairs: Aria Alasty (*Iran*), **Vladik Kreinovich** (*USA*)

9:30–9:50
On the robust control of chaos in Cournot economic model with complementary goods
A. Alasty (*National Research Institute for Science Policy (NRISP), Iran*), **M. Mortezapouraghdam**, **H. Sadeghian** (*Sharif University of Technology, Tehran, Iran*), **H. Salarieh** (*National Research Institute for Science Policy (NRISP), Iran*)

9:50–10:10
Towards an optimal algorithm for computing fixed points: dynamical systems approach, with applications to transportation engineering
R. L. Cheu (*Univ. of Texas at El Paso, USA*), **G. Xiang** (*Philips Healthcare Informatics El Paso, USA*), **V Kreinovich** (*Univ. of Texas at El Paso, USA*)

10:10–10:30
Comments on the method of harmonic balance for nonlinear conservative single-degree-of-freedom systems
P. C. Müller (*University of Wuppertal, Germany*)

10:30–10:50
Stabilization of the spatial oscillations of an elastic system with a payload
A. L. Zuyev (*Institute of Applied Mathematics and Mechanics, NAS of Ukraine, Ukraine*)

12:00–13:30 – Lunch

THURSDAY, JULY 3

Thursday, July 3, 9:30–11:30
Room 1

Mini-Symposium "Nonlinear Dynamics of Structures and Machines–II"
Organizers: Matthew P. Cartmell (*UK*)**, Yuri V. Mikhlin** (*Ukraine*)**, Konstantin V. Avramov** (*Ukraine*)

Session ThA1, "Nonlinear Dynamics of Structures"
Co-chairs: Marco Amabili (*Italy*), **Andrei Metrikine** (*The Netherlands*)

9:30–9:50
Simplified nonlinear dynamical equations of circular cylindrical shell
I. Andrianov, D. Weichert (*Aachen Technical University, Germany*), **V. Danishevs'kyy** (*Prydniprovska State Academy of Civil Engineering and Architecture, Ukraine*)

9:50–10:10
Nonlinear vibration of the laminated shallow shells with complex plan form
L. Kurpa, T. Shmatko, G. Timchenko (*National Technical University "KhPI", Ukraine*)

10:10–10:30
Energy transfer between hydrodynamical systems and excitation machines of limited power
T. Krasnopolskaya (*Institute of Hydromechanics NASU, Ukraine*), **A. Shvets** (*NTUU "Kyiv polytechnical institute", Ukraine*)

10:30–10:50
Application of a hybrid WKB-Galerkin method to a nonlinear plate dynamic problem with time dependent damping coefficient
V. Z. Gristchak, O. A. Ganilova (*Zaporizhzhya National University, Ukraine*)

10:50–11:10
Is the nonlinear slewing flexible beam system input-state linearizable?
A. Fenili (*Federal University of ABC (UFABC), Brazil*)

11:30–11:50 – Coffee

Thursday, July 3, 9:30–11:30
Room 2

Mini-Symposium "Dynamics and Optimization of Multibody Systems–I"
Organizers: Dieter Bestle (*Germany*)**, Felix Chernousko** (*Russia*)**, Peter Eberhard** (*Germany*)

Session ThA2, "System Optimization and Identification"
Co-chairs: Dieter Bestle (*Germany*)**, Felix Chernousko** (*Russia*)**, Peter Eberhard** (*Germany*)

9:30–9:50
The function of the distance of a curve from its centroid in optimal synthesis of a five-bar linkage
J. Buśkiewicz (*Poznan University of Technology, Poland*)

9:50–10:10
Kinematics analysis, design and optimization of a six degrees-of-freedom parallel robot
S.-D. Stan, V. Mătieş, R. Bălan (*Technical University of Cluj-Napoca, Romania*)

10:10–10:30
Optimal periodic motions of systems with internal masses in resistive media
F. Chernousko, N. Bolotnik (*Institute for Problems in Mechanics, RAS, Russia*)

10:30–10:50
Necessary conditions for the impulsive-optimal control of mechanical systems with blockable degrees of freedom
K. Yunt (*Mechanical and Process Engineering ETH-Zurich, Switzerland*)

10:50–11:10
Dynamics of a real triple pendulum - modeling and experimental observation
J. Awrejcewicz, G. Kudra (*Technical University of Łódź, Poland*)

11:30–11:50 – Coffee

Thursday, July 3, 9:30–11:30
Room 3

Mini-Symposium "Engineering Applications-II"
Organizers: Marian Wiercigroch (*UK*), **Alexander Fidlin** (*Germany*)

Session ThA3, "Vibrations: Isolation and Control"
Co-chairs: Marian Wiercigroch (*UK*), **Alexander Fidlin** (*Germany*)

9:30–9:50
Suppression of aeroelastic instabilities by broadband passive targeted energy transfers
Y. S. Lee, D. M. McFarland (*University of Illinois at Urbana-Champaign, USA*), **A. F. Vakakis** (*National Technical University of Athens, Greece; University of Illinois at*

Urbana-Champaign, USA)**, L. A. Bergman** (*University of Illinois at Urbana-Champaign, USA*), **G. Kerschen** (*University of Liege, Belgium*)

9:50–10:10
A passive vibration isolator incorporating a composite bistable plate
A. Carrella, **M. I. Friswell** (*University of Bristol, UK*)

10:10–10:30
Using hybrid isolation systems with friction dampers for seismic protection of structures
Yu. Ribakov, G. Agranovich (*Ariel University Center of Samaria, Israel*)

10:30–10:50
Nonlinear vibrations of a radially stretched circular hyperelastic membrane
P. B. Gonçalves, R. M. Soares, D. Pamplona (*Catholic University, PUC-Rio, Brazil*)

10:50–11:10
Effect of linearly varying normal force upon the nonlinear modal analysis of slender beams
C. E. N. Mazzilli (*University of São Paulo, Brasil*)

11:30–11:50 – Coffee

Thursday, July 3, 9:30–11:10
Room 4

Mini-Symposium "Nonlinear Dynamics and Characterization of Distributed-Parameter Systems–II"
Organizers: Balakumar Balachandran (*USA*)**, Sotirios Natsiavas** (*Greece*)**, Fabrizio Vestroni** (*Italy*)

Session ThA4, "Nonlinear dynamics and wave propagation"
Co-chairs: Balakumar Balachandran (*USA*)**, Sotirios Natsiavas** (*Greece*)**, Fabrizio Vestroni** (*Italy*)

9:30–9:50
A semi-empirical fluid force model for vortex-induced vibration of an elastic structure
A. K. Abramyan, S. A. Vakulenko (*Institute for the Problems of Mechanical Engineering, RAS; Delft University of Technology, The Netherlands*)

9:50–10:10
Improvement of numerical description of non-linear shock profiles by use of analytical solutions of differential approximations
A. Porubov (*Institute of Problems in Mechanical Engineering RAS, Russia*), **D. Bouche** (*CMLA, ENS de Cachan, France*), **G. Bonnaud** (*CEA, INSTN, Centre de Saclay, France*)

10:10–10:30
On the momentum of elastic waves and its force on the obstacle
G. G. Denisov (*Research Institute for Applied Mathematics and Cybernetics of UNN, Russia*), **V. V. Novikov, M. L. Smirnova** (*University of Nizhny Novgorod, Russia*)

10:30–10:50
Simulation of interaction of emission with the self-affine surface by system with the complex argument
A. Kopyltsov (*A. I. Herzen Russian State Pedagogical University, Russia*)**, G. Lukyanov** (*State University of Information Technologies, Mechanics and Optics, Russia*)
10:50–11:10
Stability of spatial steady state solutions for hypercycles replication system
A. S. Bratus', V. P. Posviansky (*Moscow State University, Russia*)

11:30–11:50 – Coffee

Thursday, July 3, 9:30–11:30
Room 5

Mini-Symposium "Nonlinear Vibrations and Applications-V"
Organizers: Ilya Blekhman (Russia), **Jon Juel Thomsen** (*Denmark*)

Session ThA5, "Phenomena: Nonlinear & Parametric Resonance, Bifurcations & Chaos, Flutter"
Co-Chairs: Ilya Blekhman (Russia), **Jon Juel Thomsen** (*Denmark*)

9:30–9:50
Forced chaotic pendulums realized in ode architect and as a result transformed into ideal limit cycles
I. A. Kunin (*University of Houston, USA*), **Yu. A. Kuperin** (*Saint Petersburg State University, Russia*)

9:50–10:10
Frequency islands in the primary resonance of nonlinear delay systems
M. F. Daqaq (*Clemson University, USA*), **G. W. Vogl** (*National Institute of Standards, USA*)

10:10–10:30
Limit cycle bifurcations of a piecewise linear dynamical system
V. A. Gaiko (*Belarusian State University of Informatics and Radioelectronics, Belarus*), **W. T. van Horssen** (*Delft University of Technology, The Netherlands*)

10:30–10:50
Non-linear and chaotic behavior of a magnetically levitated doubly-clamped beam
A. M. Mashat, Z. Mohammadi, H. Salarieh, A. Alasty (*Sharif University of Technology, Iran*)

10:50–11:10
Resonance of proper frequencies 1:2 as a reason for hard excitation of oscillations for the plate in ultrasonic gas flow
A. Kulikov (*University of Yaroslavl, Russia*)

11:10–11:30
Subcritical flutter in acoustics of friction
O. Kirillov (*Technische Universität Darmstadt, Germany*)

11:30–11:50 – Coffee

Thursday, July 3, 9:30–11:10
Room 6

Section "Applications in Physics and Nanomechanics-IV"

Session TuA4, "Application in Optics and Molecular Physics"
Chair: Alexey Porubov (*Russia*)

9:30–9:50
Velocity selection for ionization fronts in planar dc gas-discharge systemwith high-ohmic electrode
S. V. Gurevich (*Westfälische Wilhelms-Universität Münster, Germany*), **S. Amiranashvili** (*Weierstrass Institute for Applied Analysis and Stochastics, Germany*)

9:50–10:10
On hybrid automata models of biochemical interactions – hysterezis and Zeno behaviour
R. Dobrescu, V. E. Oltean, M. Dobrescu (*Politehnica University of Bucharest, Romania*)

10:10–10:30
On two qualitative representations of a genetic regulatory network
V. E. Oltean, R. Dobrescu, M. Dobrescu (*Politehnica University of Bucharest, Romania*)

10:30–10:50
Low-frequency fluctuations with 1/*f* spectra in critical regimes with phase transitions
V. P. Koverda, V. N. Skokov, A. V. Reshetnikov (*Institute of Thermophysics Ural Branch of the RAS, Russia*)

10:50–11:10
On the role of Fjörtoft's spectral number in the linear instability of ideal flows on a sphere
Yu. N. Skiba (*Ciudad Universitaria, México*)

11:30–11:50 – Coffee

Thursday, July 3, 9:30–11:30
Room 7

Mini-Symposium "Experimental Methods-I"
Organizers: Walter Lacarbonara (*Italy*)**, Nathan van de Wouw** (*The Netherlands*)**, Hiroshi Yabuno** (*Japan*)

Session ThA7, "Experimental Methods: Structural dynamics"
Co-Chairs: **Walter Lacarbonara** (*Italy*)**, Nathan van de Wouw** (*The Netherlands*)**, Hiroshi Yabuno** (*Japan*)

9:30–9:50
Vibrations of circular cylindrical shells under seismic excitation
F. Pellicano (*Università di Modena e Reggio Emilia, Italy*)

9:50–10:10
Piezo stack actuators in flexible structures: experimental verification of a nonlinear modeling and identification approach
A. Schirrer, M. Kozek, C. Benatzky (*Vienna University of Technology, Austria*)

10:10–10:30
Experimental and numerical investigation of an 11-story reinforced concrete building's nonlinear dynamic behavior
I. Iskhakov, Y. Ribakov (*Ariel University Center of Samaria, Israel*)

11:30–11:50 – Coffee

Thursday, July 3, 11:50–13:30
Room 1

Mini-Symposium "Nonlinear Dynamics of Structures and Machines–III"
Organizers: Matthew P. Cartmell (*UK*)**, Yuri V. Mikhlin** (*Ukraine*)**, Konstantin V. Avramov** (*Ukraine*)

Session ThM1, "Nonlinear Dynamics of Machines"
Co-chairs: Yuri V. Mikhlin (*Ukraine*)**, Igor Andrianov** (*Germany*)

11:50–12:10
The Hopf bifurcations in the wave models of torsional vibrations of superdeep drill columns
V. Gulyayev, S. Hudoliy, O. Glushakova (*National Transport University, Ukraine*)

12:10–12:30
Shimmy in a nonlinear model of an aircraft nose landing gearwith non-zero rake angle
Ph. Thota, B. Krauskopf, M. Lowenberg (*University of Bristol, UK*)

12:30–12:50
Simulation of turbomachine blade bending-torsion flutter using a pretwisted beam finite element
J. Temis, I. Fedorov (*Bauman Moscow State Technical University, Russia*)

12:50–13:10
Modelling the dynamics of a rigid rotor in active magnetic bearings
G. Martynenko (*National Technical University* Kharkiv Polytechnic Institute*, Ukraine*)

13:10–13:30
On hybrid automata models of biochemical interactions – hysterezis and Zeno behaviour
R. Dobrescu, V. E. Oltean, M. Dobrescu (*Politehnica University of Bucharest, Romania*)

13:30–15:00 – Lunch

15:00–15:20 – Coffee

Thursday, July 3, 11:50–13:30
Room 2

Mini-Symposium "Dynamics and Optimization of Multibody Systems–II"
Organizers: Dieter Bestle (*Germany*)**, Felix Chernousko** (*Russia*)**, Peter Eberhard** (*Germany*)

Session ThM2, "Mechanical system modelling"
Co-chairs: Dieter Bestle (*Germany*)**, Felix Chernousko** (*Russia*)**, Peter Eberhard** (*Germany*)

11:50–12:10
SYMBS – symbolical analysis and optimization of multibody systems in MATLAB
T. Kurz, C. Henninger, P. Eberhard (*University of Stuttgart, Germany*)

12:10–12:30
A computational efficient approach to the dynamic modeling of 6-DOF parallel manipulators
A. M. Lopes (*Universidade do Porto, Portugal*)

12:30–12:50
Improving the reduction process in flexible multibody dynamics by the use of 2^{ND} order position Gramian matrices
J. Fehr, P. Eberhard, M. Lehner (*University of Stuttgart, Germany*)

13:30–15:00 – Lunch

15:00–15:20 – Coffee

Thursday, July 3, 11:50–13:30
Room 3

Mini-Symposium "Engineering Applications-III"
Organizers: Marian Wiercigroch (*UK*), **Alexander Fidlin** (*Germany*)

Session ThM3, "Fluid-structure interaction"
Co-chairs: Marian Wiercigroch (*UK*), **Alexander Fidlin** (*Germany*)

11:50–12:10
About absolute stability of control valves
E. Kremer (*LuK GmbH & Co.oHG, Germany*)

12:10–12:30
Galloping of the light body in media flow
V. A. Samsonov (*Lomonosov Moscow State University, Russia*)

12:30–12:50
Effect of geometric imperfections on nonlinear stability of cylindrical shells conveying fluid
M. Amabili (*Univerista di Parma, Italy*), **K. Karagiozis** (*University of Illinois, USA*), **M. P. Païdoussis** (*McGill University, Canada*)

12:50–13:10
On output power for wave type wind turbines and for autorotating finned cylinders
P. R. Andronov, M. Z. Dosaev, G. Ya. Dynnikova, D. A. Grigorenko, Yu. D. Seliutsky (*Lomonosov Moscow State University, Russia*), **S.D. Strekalov** (*Volgograd State Agricultural Academy, Russia*)

13:10–13:30
A multigrid approach for piston dynamics and skirt EHL lubrication
V. D'Agostino, C. Russo (*University of Salerno, Italy*)

13:30–15:00 – Lunch

15:00–15:20 – Coffee

Thursday, July 3, 11:50–13:30
Room 4

Mini-Symposium "Nonlinear Stochastic Systems–I"
Organizers: Sri Namachchivaya (*USA*)**, Arvid Naess** (*Norway*)**, Daniil Iourchenko** (*Russia*)

Session ThM4
Co-chairs: Sri Namachchivaya (*USA*)**, Arvid Naess** (*Norway*)**, Daniil Iourchenko** (*Russia*)

11:50–12:10
Synchronization of local oscillators in the lattice Lotka–Volterra model due to long range mixing
A. Efimov, A. Shabunin (*Saratov State University, Russia*)

12:10–12:30
The reliability of a dry friction system subjected to stochastic forcing – a numerical approach
D. Iourtchenko (*SPBSPU, Russia*), **A. Naess, O. Gaidai** (*Centre for Ships and Ocean Structures, NTNU, Norway*), **E. Mo** (*Department of Mathematical Sciences, NTNU, Norway*)

12:30–12:50
Data assimilation in the detection of vortices
A. Barreiro, S. Liu, N. Sri Namachchivaya, P. W. Sauer, R. B. Sowers (*University of Illinois, Urbana, USA*)

12:50–13:10
Phytoplankton-zooplankton systems with bounded random parameters
Y. Zhang (*Northwestern Polytechnical University, China; South University of Toulon Var, University Institute of Technology, France*)**, J.-M. Ginoux, B. Rossetto, J.-L. Jamet** (*South University of Toulon Var, University Institute of Technology, France*)

13:30–15:00 – Lunch

15:00–15:20 – Coffee

Thursday, July 3, 11:50–13:30
Room 5

Mini-Symposium "Fractional Derivatives and Their Applications-IV"
Organizers: José Tenreiro Machado (*Portugal*)**, Alexander Belyaev** (*Russia*)**, Om Prakesh Agrawal** (*USA*)

Session ThM5, "Application of Fractional Derivatives in Engineering and Physics"
Co-chairs: José Tenreiro Machado (*Portugal*)**, Alexander Belyaev** (*Russia*)**, Om Prakesh Agrawal** (*USA*)

11:50–12:10
Analysis of rectangular plate vibrations in a fractional derivative viscous medium
Yu. A. Rossikhin, M. V. Shitikova (*Voronezh State University of Architecture and Civil Engineering, Russia*), **C.-K. Chao, D. Bakti Persada** (*Taiwan National University of Science and Technology, Republc of China*)

12:10–12:30
Describing function of a simple mechanical system with non-linear friction
F. B. M. Duarte (*School of Technology, Viseu, Portugal*), **J. A. T. Machado** (I*nstitute of Engineering, Porto, Portugal*)

12:30–12:50
On some simple mechanical systems governed by differential equations with fractional derivatives
A. K. Belyaev (*Institute of Problems in Mechanical Engineering, RAS, Russia*), **N. A. Beliaev**

12:50–13:10
Study on fractionalized oscillatory systems in polar coordinates
M. Attari, M. Haeri, M. S. Tavazoei (*Sharif University of Technology, Iran*)

13:30–15:00 – Lunch

15:00–15:20 – Coffee

Thursday, July 3, 11:50–13:30
Room 6

Section "Nonlinear Control-III"

Session ThM6
Co-Chairs: Yevgeny Somov (*Russia*), **Nurkan Yagiz** (*Turkey*)

11:50–12:10
Control of a wheeled robot following a curvilinear path
A. V. Pesterev, L. B. Rapoport, R. F. Gilimyanov (*Institute of Control Sciences RAS; Javad GNSS, Russia*)

12:10–12:30
Global finite-time positioning of robot manipulators with bounded inputs
Y. Su (*Xidian University, China*), **P. C. Müller** (*University of Wuppertal, Germany*)

12:30–12:50
Optimal synthesis of gyromoment guidance and control for spacecraft and free-flying robots
Ye. Somov (*Samara Scientific Center RAS, Russia*)

12:50–13:10
Sliding mode control of a vehicle with non-linearities
N. Yagiz, Y. Hacioglu, Y. Taskin (*Istanbul University, Turkey*)

13:10–13:30
Width-pulse control of a flexible satellite at damping and guidance on the Sun and the Earth
S. Somov (*Samara Scientific Center RAS, Russia*)

13:30–15:00 – Lunch

15:00–15:20 – Coffee

Thursday, July 3, 11:50–13:30
Room 7

Mini-Symposium "Experimental Methods-II"
Organizers: Walter Lacarbonara (*Italy*)**, Nathan van de Wouw** (*The Netherlands*)**, Hiroshi Yabuno** (*Japan*)

Session ThM7, "Control applications"
Co-Chairs: Claude Lamarque (*France*)**, Remco Leine** (*Switzerland*)

11:50–12:10
Nonsmooth dynamics and FPIC chaos control in a DC-DC ZAD-strategy power converter
F. Angulo, G. Olivar, J. A. Taborda, F. E. Hoyos (*Universidad Nacional de Colombia, Colombia*)

12:10–12:30
Amplitude control of a self-vibration machine
Y. Uchiyama, H. Yabuno (*University of Tsukuba, Japan*)

12:30–12:50
Switching control in active vibration isolation
M. F. Heertjes, N. van de Wouw, W. P. M. H. Heemels (*Eindhoven University of Technology, The Netherlands*)

12:50–13:10
Experimental research of consecutive compensator approach on basis of mechatronic systems
A. A. Bobtsov, A. Pyrkin (*Saint-Petersburg State University of Information Technologies Mechanics and Optics, Russia*)

13:30–15:00 – Lunch

15:00–15:20 – Coffee

Thursday, July 3, 15:20–17:00
Room 1

Mini-Symposium "Nonlinear Dynamics of Structures and Machines-IV"
Organizers: Matthew P. Cartmell (*UK*)**, Yuri V. Mikhlin** (*Ukraine*)**, Konstantin V. Avramov** (*Ukraine*)

Session ThP1, "Theoretical Foundations of Nonlinear Dynamics of Structures and Machines"
Co-chairs: Matthew Cartmell (*UK*)**, Giuseppe Rega** (*Italy*)

15:20–15:40
Nonlinear modes for forced and parametric vibrations and their applications for dynamics of structures
K. V. Avramov (*Podgorny Institute for Problems of Engineering Mechanical NAS of Ukraine, Ukraine*), **R. Kochurov** (*National Technical University "KhPI",Ukraine*)

15:40–16:00
Some numerical results on energy transfer between mechanical oscillators
S. N. J. Costa, C. H. G. Hassmann, J. M. Balthazar, M. J. H. Dantas (*Brazil*)

16:00–16:20
The behavior of an aerodynamic pendulum with vertical axis of rotation
L. Klimina, B. Lokshin (*Lomonosov Moscow State University, Russia*), **H. Shyh-Shin** (*Ching Yun University, Taiwan*)

16:20–16:40
On permanent rotations of a string-driven rigid body
G. G. Besedin, T. S. Sumin (*Lomonosov Moscow State University, Russia*)

16:40–17:00
About dynamics of heavy ball on the rubed plane
A. Kireenkov (*Institute for Problems in Mechanics RAS, Russia*)

Thursday, July 3, 15:20–16:40
Room 2

Mini-Symposium "Dynamics and Optimization of Multibody Systems–III"
Organizers: Dieter Bestle (*Germany*)**, Felix Chernousko** (*Russia*)**, Peter Eberhard** (*Germany*)

Session ThP2, "Mechanical system analysis and control"
Co-chairs: Dieter Bestle (*Germany*)**, Felix Chernousko** (*Russia*)**, Peter Eberhard** (*Germany*)

15:20–15:40
Controlled motion of mechanical systems induced by vibration and dry friction
N. Bolotnik (*Institute for Problems in Mechanics RAS, Russia*)**, M. Pivovarov, I. Zeidis, K. Zimmermann** (*Technische Universitaet Ilmenau, Germany*)

15:40–16:00
Varational approach and spline technique to optimization of controlled beam motions
G. Kostin, **V. Saurin** (*Institute for Problems in Mechanics RAS, Russia*)

16:00–16:20
On systems with 'leier constraint' in the central newtonian force field
A. V. Rodnikov (*Bauman Moscow State Technical University, Russia*)

16:20–16:40
On some aspects of the restricted three dimensional three-body problem
T. Salnikova (*Moscow State Lomonosov University, Russia*)

Thursday, July 3, 15:20–16:40
Room 3

Mini-Symposium "Engineering Applications-IV"
Organizers: Marian Wiercigroch (*UK*), **Alexander Fidlin** (*Germany*)

Session ThP3
Co-chairs: Marian Wiercigroch (*UK*), **Alexander Fidlin** (*Germany*)

15:20–15:40
An approximate analytical solution describing oscillations of a conductor in a magnetic field
Jee-Hou Ho, Ko-Choong Woo (*The University of Nottingham Malaysia Campus, Malaysia*)

15:40–16:00
A dumb-bell satellite with a cabin. Existence and stability of relative equilibria
V. Buchin, A. Burov (*Dorodnicyn Comp. Centre, RAS, Russia*), **H. Troger** (*Vienna University of Technology, Austria*)

16:00–16:20
Finite element modeling of the arresting gear and simulation of the aircraft deck landing dynamics
D. Mikhaluk, I. Voinov, A. Borovkov (*Saint Petersburg State Polytechnical University, Russia*)

16:20–16:40
Finite element modeling of the crash-tests for energy absorbing lighting columns
O. Klyavin, A. Michailov, A. Borovkov (*Saint Petersburg State Polytechnical University, Russia*)

Thursday, July 3, 15:20–17:00
Room 4

Mini-Symposium "Nonlinear Stochastic Systems–II"
Organizers: Sri Namachchivaya (*USA*)**, Arvid Naess** (*Norway*)**, Daniil Iourchenko** (*Russia*)

Session ThP4
Co-chairs: Sri Namachchivaya (*USA*)**, Arvid Naess** (*Norway*)**, Daniil Iourchenko** (*Russia*)

15:20–15:40
Novel solution methodology for stochastic LQ problems with bounded control
D. Iourtchenko (*Saint Petersburg State Polytechnic University, Russia*)

15:40–16:00
Dynamics of quasi linear systems with multi-time-delayed feedback control and wide-band random excitation
X. P. Li, Z. H. Liu, W. Q. Zhu (*Zhejiang University, China*)

16:00–16:20
Approximate solution for problem of dynamical optimization of process control
L. Yakovis (*Saint Petersburg State Polytechnic University, Russia*)

16:20–16:40
On analysis of stochastic systems with delays
I. E. Poloskov (*Perm State University, Russia*)

16:40–17:00
Chaotic instantons and ground quasienergy levels in kicked double-well system
V. I. Kuvshinov, A. V. Kuzmin, V. A. Piatrou (*Joint Institute for Power and Nuclear Research, Minsk, Belarus*)

Thursday, July 3, 15:20–17:00
Room 6

Section "Nonlinear Control-IV"

Session ThP6
Co-Chairs: Alexander Yu. Pogromsky (*The Netherlands*), **Vera B. Smirnova** (*Russia*)

15:20–15:40
Optimal behavior for the Kumar-Seidman network of switching servers
E. Lefeber, J. E. Rooda (*Eindhoven University of Technology, The Netherlands*)

15:40–16:00
The problem of cycle-slipping for multidimensional phase control systems
V. B. Smirnova (*Saint Petersburg State University of Architecture and Civil Engineering, Russia*), **A. I. Shepeljavyi** (*Saint Petersburg State University, Russia)*, **N. V. Utina, A. A. Perkin** (*Saint Petersburg State University of Architecture and Civil Engineering, Russia*)

16:00–16:20
Optimality conditions for a class of hybrid systems
A. M. Valuev (*Moscow State Mining University, Russia*)

16:20–16:40
On optimal reset law design of reset control systems
Y. Guo, Y Wang, L. Xie (*School of EEE, NTU, Singapore*), **C. Du** (*Data Storage Institute A*Star, Singapore*), **H. Li** (*School of EEE, NTU, Singapore*)

16:40–17:00
Incremental stability and power allocation in cellular networks
V. Kulkarni (*India*), **V. Fromion** (*France*)

Thursday, July 3, 15:20–17:00
Room 7

Mini-Symposium "Experimental Methods-III"
Organizers: Walter Lacarbonara (*Italy*)**, Nathan van de Wouw** (*The Netherlands*)**, Hiroshi Yabuno** (*Japan*)

Session ThP7, "Stability, vibrations and complexity"
Co-chairs: Walter Lacarbonara (*Italy*)**, Nathan van de Wouw** (*The Netherlands*)**, Hiroshi Yabuno** (*Japan*)

15:20–15:40
Quantitative description of nonlinear dinamics of swelling in the porous acrylic thin films
G. Lukyanov, M. Uspenskaya, V. Solovyev (*State University of Informations Technologies, Mechanics and Optics, Russia*)**, A. Gorlyak** (*State Electrotechnical University, Russia*)

15:40–16:00
Towards practical stability limits in turning
T. Kalmár-Nagy, P. Wahi (*Texas A&M University, USA*)

16:00–16:20
Parametric double pendulum
J. C. Sartorelli, B. Serminaro (*Universidade de São Paulo, Brazil*), **W. Lacarbonara** (*Università degli Studi di Roma La Sapienza, Italy*)

16:20–16:40
Swing up a double pendulum by simple feedback control
J. Awrejcewicz (*Technical University of Łódź, Poland*), **S. A. Reshmin** (*Institute for Problems in Mechanics RAS, Russia*), **G. Wasilewski, G. Kudra** (*Technical University of Łódź, Poland*)

FRIDAY, JULY 4

Friday, July 4, 9:30–12:30
Hotel Saint-Petersburg, Conference Hall

Plenary Session II
Chair:

9:30–10:15
Rock, rattle and slide; a bifurcation theory for picewise-smooth systems
A. R. Champneys (*University of Bristol, UK*)

10:15–10:40 – Coffee break

10:40–11:25
Plenary talk (to be announced)

11:25–12:30
Plenary discussion: “Present and future of Nonlinear Dynamics”

12:30–13:00 – Closing ceremony