ENOC 2022 Program

10th European Nonlinear Dynamics Conference

July 17-22, 2022
Lyon, France

ORGANIZERS

Local Organizing Committee (LOC)

Claude Henri Lamarque (Chair)
Régis Dufour (Co-Chair)
Fabrice Thouverez (Co-Chair)
Louis Jézéquel (Honorary Chairman)
Sébastien Baguet (Secretary General)

Administrative support (INSAVALOR)
Muriel Personne
Secretarial support
Zahia Achoui, Cécile Demornex
Local organizing committee
Sébastien Besset
Laurent Blanc
Emmanuel Gourdon
Alain Le Bot
Lionel Manin†
Lyes Nechak
Joel Perret-Liaudet
Didier Rémond
Emmanuel Rigaud
Jean-Jacques Sinou
Alireza Ture Savadkoohi

† Lionel left us in may 2021. We would like to acknowledge his memory and his dynamic involvement in the organizing committee.

European Nonlinear Oscillations Conference Committee (ENOCC)

Gaëtan Kerschen (Chair)
University of Liege, Belgium
Katrin Ellermann
University of Graz, Austria
Alexander Fidlin
Karlsruher Institut für Technologie, Germany
Oleg Gendelman
Technion, Israel Institute of Technology, Israel
Ivana Kovačić (Co-chair)
University of Novi Sad, Faculty of Technical Sciences, Serbia
Claude-Henri Lamarque
University of Lyon, France
Stefano Lenci
Università Politecnica delle Marche, Italy
Andrei Metrikine
Delft University of Technology, The Netherlands
Ekaterina Pavlovskaia
University of Aberdeen, UK
Gabor Stepan
Budapest University of Technology and Economics, Hungary

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Scope of the conference

Although the brand name ENOC is still used as the historical abbreviation, the present European Nonlinear Dynamics Conferences organized by EUROMECH aim at covering the complete field of Nonlinear Dynamics, including Multibody Dynamics and coupling to Stability, Identification, Control and (Structural) Optimization.

Presently, ENOCs are the largest, high-quality, scientific events in the broad area of nonlinear dynamics not only in Europe but on a worldwide basis. Indeed, parallel important events organized by other Societies often cover partial aspects of the whole scientific area, for being either more theoretically or more engineering oriented.

In contrast, ENOC encompasses many diverse topics ranging from dynamical systems theory to different engineering applications, and collects scholars from theoretical and applied mechanics as well as from applied mathematics and physics, within an actually cross-disciplinary framework.

The 10th European Nonlinear Dynamics Conference (ENOC 2022) is held in Lyon, France and is organized by the University of Lyon at the Lyon Convention Centre.

ENOC History

Since 1992, EUROMECH organizes European Nonlinear Oscillations Conferences through the European Nonlinear Oscillations Conference Committee (ENOCC). Actually, these events have a much longer tradition, since they are successors of the former ICNO (International Conference on Nonlinear Oscillations) series held from 1961 to 1990 in East-European countries. Starting from the 1st International Conference on Nonlinear Oscillations in Kiev, 1961, twelve ICNOs were organized till 1990. Then, starting with the 1st European Nonlinear Oscillations Conference in Hamburg, 1992, nine ENOCs were organized till 2017 (Prague, Copenhagen, Moscow, Eindhoven, St. Petersburg, Rome, Wien and Budapest).

Both the ICNO and ENOC series of conferences intend to be a meeting place for nonlinear dynamics' scientists from all over the world, where in particular "East meets West"

ENOC 2022 - Program overview

July 17-22, 2022 - Lyon, France

		room Auditorium	room Rhône 1	room Rhone 2	room Rhone 3A	room Rhone 3B	room St Clair 1	room St Clair 2	room St Clair 3A	room St Clair 3B
Sunday, July 17, 2022										
17.00-21.00	Early registration									
19.00-21.00	Welcome reception									
day, July 18, 2022										
09:30-10:30	Opening ceremony									
10:30-11:00	Coffee break									
11:00-12:00	Plenary lecture	I. Kovačić								
12:00-13:30	Lunch									
13:30-15:30	Parallel MS sessions		MS-15	MS-14	MS-03	MS-04	MS-05	MS-07	MS-10	MS-20
15:30-16:00	Coffee break									
16:00-18:20	Parallel MS sessions		MS-15	MS-14	MS-03	MS-04	MS-05	MS-07	MS-10	MS-20
Tuesday, July 19, 2022										
08:30-10:30	Parallel MS sessions	MS-09	MS-15	MS-14	MS-03	MS-04	MS-16	MS-21	MS-13	MS-01
10:30-11:00	Coffee break									
11:00-12:00	Plenary lecture	E. Schöll								
12:00-13:30	Lunch									
13:30-15:30	Parallel MS sessions	MS-09	MS-15	MS-14	MS-12	MS-08	MS-16	MS-21	MS-13	MS-01
15:30-16:00	Coffee break									
16:00-18:20	Parallel MS sessions	MS-09	MS-15	MS-14	MS-06	MS-08	MS-05	MS-07	MS-10	MS-01
Wednesday, July 20, 2022										
08:30-10:30	Parallel MS sessions	MS-09	MS-18	MS-16	MS-03	MS-08	MS-22	MS-21	MS-17	MS-19
10:30-11:00	Coffee break									
11:00-12:00	Plenary lecture	A. Vakakis								
12:00-13:30	Lunch									
14:00-18:00	Excursion									
Thursday, July 21, 2022										
08:30-10:30	Parallel MS sessions	MS-09	MS-18	MS-16	MS-12	MS-08	MS-02	MS-11	MS-17	MS-19
10:30-11:00	Coffee break									
11:00-12:00	Plenary lecture	W. Lacarbonara								
12:00-13:30	Lunch									
13:30-15:30	Parallel MS sessions	MS-09	MS-18	MS-14	MS-12	MS-08	MS-02	MS-11	MS-17	MS-19
15:30-16:00	Coffee break									
16:00-18:00	Poster session									
19:00	Conference banquet									
Friday, July 22, 2022										
08:30-10:30	Parallel MS sessions	MS-09	MS-18	MS-14	MS-12	MS-08	MS-02	MS-11	MS-17	MS-19
10:30-11:00	Coffee break									
11:00-12:00	Plenary lecture	B. Cochelin								
12:00-13:00	Closing ceremony									

Mini-Symposia (MS)

MS-01	Reduced-Order Modeling and System Identification
MS-02	Asymptotic Methods
MS-03	Computational Methods
MS-04	Experiments in Nonlinear Dynamics and Control
MS-05	Slow-Fast Systems and Phenomena
MS-06	Fractional Derivatives
MS-07	Dynamics and Optimization of Multibody Systems
MS-08	Nonlinear Phenomena in Mechanical and Structural Systems
MS-09	Nonlinear Dynamics in Engineering Systems
MS-10	Non-Smooth Dynamics
MS-11	Systems with Time Delay
MS-12	Micro- and Nano-Electro-Mechanical Systems
MS-13	Nonlinear Dynamics in Biological Systems
MS-14	Nonlinear Dynamics for Engineering Design
MS-15	Energy Transfer and Harvesting in Nonlinear Systems
MS-16	Random Dynamical Systems - Recent Advances and New Directions
MS-17	Time-periodic systems
MS-18	Control and Synchronization in Nonlinear Systems
MS-19	Fluid-Structure Interaction
MS-20	Wave Propagation in Mechanical Systems
MS-21	Nonlinear Dynamics in Acoustics
MS-22	Special session dedicated to L.I. Manevitch

KEYNOTE LECTURES

Auditorium Lumière - 11:00-12:00

Monday, July 18, 2022
On Exact Analytical Solutions for Free and Forced Discrete and Continuous Nonlinear Oscillators
Ivana Kovačić
University of Novi Sad, Faculty of Technical Sciences, Serbia

Tuesday, July 19, 2022
On the role of nonlinear dynamics in the installation, operation and monitoring of offshore wind turbines
Andrei Metrikine
Faculty of Civil Engineering, TU Delft

Wednesday, July 20, 2022
Engineering Nonlinearity
Oleg Gendelman
Technion - Israel Institute of Technology, Haïfa, Israel

Thursday, July 21, 2022
High damping metamaterials with hysteretic resonators
Walter Lacarbonara
Department of Structural and Geotechnical Engineering, Sapienza University of Rome, Italy

Friday, July 22, 2022
Computing nonlinear modes in complex continuum mechanical models
Bruno Cochelin
École Centrale de Marseille, University of Marseille, France

Mini-Symposia (MS) Co-organizers

MS-01 Reduced-Order Modeling and System Identification
Lawrence A. Bergman, University of Illinois at Urbana-Champain, USA
Mehmet Kurt, Stanford University, USA
Keegan Moore, University of Nebraska-Lincoln, USA

MS-02 Asymptotic Methods
Jan Awrejcewicz, University of Lodz, Poland
Igor V. Andrianov, Aachen University, Germany
Leonid I. Manevitch†, Russian Academy of Sciences, Russia
Livija Cveticanin, University of Novi Sad, Serbia
† Leonid Manevich left us in the summer of 2020. We would like to pay tribute to him.

MS-03 Computational Methods
Jan Sieber, University of Exeter, UK
Harry Dankowicz, University of Illinois at Urbana-Champaign, USA
Themistoklis Sapsis, Massachusetts Institute of Technology, USA

MS-04 Experiments in Nonlinear Dynamics and Control
Hiroshi Yabuno, University of Tsukuba, Japan
Walter Lacarbonara, University of Rome, Italy
Guilhem Michon, University of Toulouse, France

MS-05 Slow-Fast Systems and Phenomena
Jon Juel Thomsen, Technical University of Denmark, Denmark
Anatoly Neishtadt, Loughborough University, UK
D. Dane Quinn, The University of Akron, USA

MS-06 Fractional Derivatives
Pierre Melchior, Bordeaux Institute of Technology, France
Dana Copot, Ghent University, Belgium

MS-07 Dynamics and Optimization of Multibody Systems
Felix L. Chernousko, IPMech RAS, Russia
József Kövecses, McGill University, Canada
Werner Schiehlen, University of Stuttgart, Germany

MS-08 Nonlinear Phenomena in Mechanical and Structural Systems
Jerzy Warmiński, Lublin University of Technology, Poland
Bala Balachandran, University of Maryland, USA
Sotirios Natsiavas, Aristotle University of Thessaloniki, Greece

MS-09 Nonlinear Dynamics in Engineering Systems
Yuri Vladimirovich Mikhlin, National Technical University “Kharkov Polytechnical Institute”, Ukraine
Matthew Cartmell, The University of Strathclyde, Scotland, UK
Konstantin Vitalievich Avramov, NAS of Ukraine, Ukraine
Francesco Pellicano, University of Modena and Reggio Emilia, Italy

MS-10 Non-Smooth Dynamics
Remco Ingmar Leine, University of Suttgart, germany
Vincent Acary, INRIA, France
Olivier Brüls, University of Liège, Belgium

MS-11 Systems with Time Delay
Zaihua Wang, Nanjing University of Aeronautics and Astronautics, China
Tamas Insperger, Budapest University of Technology and Economics, Hungary
Gabor Orosz, University of Michigan at Ann Arbor, USA

MS-12 Micro- and Nano-Electro-Mechanical Systems
Slava Krylov, Tel Aviv University, Israel
Anil Bajaj, Purdue University, USA
E.M. Abdel-Raman, University of Waterloo, Canada

MS-13 Nonlinear Dynamics in Biological Systems
Gert van der Heijden, University College London, UH
Gergely Röst, University of Szeged, Hungary
Soheil Fatehiboroujeni, UC Merced, USA

MS-14 Nonlinear Dynamics for Engineering Design
Marco Amabili, McGill University, Canada
Stefano Lenci, Università Politecnica delle Marche, Italy
Bogdan Epureanu, University of Michigan, USA

MS-15 Energy Transfer and Harvesting in Nonlinear Systems
Alexander Vakakis, University of Illinois at Urbana-Champaign, USA
Oleg Gendelman, Technion, Israel Institute of Technology, Israel

MS-16 Random Dynamical Systems - Recent Advances and New Directions
Rachel Kuske, School of Math, Georgia Tech, USA
Daniil Yurchenko, Heriot-Watt University, UK

MS-17 Time-periodic systems
Tamas Kalmar-Nagy, Budapest University of Technology and Economics, Hungary
Thomas Pumhössel, Johannes Kepler Universität, Austria
Zoltán Dombóvári, Budapest University of Technology and Economics, Hungary

MS-18 Control and Synchronization in Nonlinear Systems
Nathan van de Wouw, Eindhoven University of Technology, The Netherlands
Bernard Brogliato, INRIA Grenoble Rhône-Alpes, France
Alexey Pavlov, Norwegian University of Science and Technology (NTNU), Norway

MS-19 Fluid-Structure Interaction
Andrei Metrikine, Delft University of Technology, The Netherlands
Oded Gottlieb, Technion - Israel Institute of Technology, Israel
Kerry Hourigan, Monash University, Australia

MS-20 Wave propagation in Mechanical Systems and Nonlinear Metamaterials
Francesco Romeo, Sapienza University of Rome, Italy
Yuli Starosvetsky, Technion, Israel Institute of Technology, Israel
Marco Lepidi, University of Genova, Italy

MS-21 Nonlinear Dynamics in Acoustics
Cyril Touzé, ENSTA ParisTech, France
Olivier Thomas, ENSAM Lille, France
Jose Antunes, Instituto Superior Técnico, University of Lisbon, Portugal
Stefan Bilbao, University of Edinburgh, UK

MS-22 Special session dedicated to L.I. Manevitch
Yuri V. Mikhlin, National Technical University «Kharkiv Polytechnic University», Ukraine
Igor V. Andrianov, Aachen University, Germany
Oleg V. Gendelman, Technion, Israel Institute of Technology, Israel

ENOC 2022 MS Sessions

Monday, July 18, 2022

Tuesday, July 19, 2022

Wednesday, July 20, 2022

Thursday, July 21, 2022

Friday, July 22, 2022

Monday, July 18, 2022

13:30 - 15:30

MS-04 Experiments in Nonlinear Dynamics and Control

Rhone 3B

Chair: Guilhem Michon

13:30 - 13:50
Analysis of nonlinear gear dynamics based on visualization of vibro-impact regimes
RIGAUD Emmanuel*, PERRET-LIAUDET Joel
*Laboratoire de Tribologie et Dynamique des Systèmes (Ecole Centrale de Lyon. 36 avenue Guy de Collongue. 69134 ECULLY cedex France)

13:50 - 14:10
Ensemble Models for Identification of Nonlinear Systems with Stick-Slip
PIRES Macedo Oliveira Dos Santos Ingrid*, AYALA Helon, WEBER Hans
*Pontifical Catholic University (Marquês de São Vicente Street, 225 Brazil)

14:10 - 14:30
Experimental bifurcation analysis of a self-excited system exhibiting a subcritical Hopf bifurcation using control-based continuation
LEE Kyoung Hyun*, BARTON David, RENSON Ludovic
*Department of Engineering Mathematics, University of Bristol (Department of Engineering Mathematics University of Bristol Merchant Venturers Building Woodland Road Bristol, BS8 1UB, England, UK United Kingdom)

14:30 - 14:50
Experimental Dynamics of Composite Bistable Cantilever Shells
MITURA Andrzej*, WARMINSKI Jerzy, BRUNETTI Matteo, ROMEO Francesco
*Department of Applied Mechanics, Lublin University of Technology (Nadbystrzycka 38D, 20-618 Lublin Poland)

14:50 - 15:10
Exploration of edge states by bubbles in a constricted Hele-Shaw channel
KEELER Jack, GAILLARD Antoine, **THOMPSON Alice***, HAZEL Andrew, JUEL Anne
*Manchester Centre for Nonlinear Dynamics (University of Manchester, Oxford Road, Manchester, M13 9PL United Kingdom) - Department of Mathematics, University of Manchester (Oxford Road, Manchester, M13 9PL United Kingdom)

Monday, July 18, 2022

13:30 - 15:30

MS-15 Energy Transfer and Harvesting in Nonlinear Systems

Rhone 1

Chair: Mohammad AL-Shudeifat

13:30 - 13:50
A Nonlinear Piezoelectric Shunt Absorber with 2:1 Internal Resonance
SHAMI Zein Alabidin*, THOMAS Olivier, CHRISTOPHE Giraud-Audine
*Laboratoire d'Ingénierie des Systèmes Physiques et Numériques (F-13617 Aix-en-Provence F-71100 Chalon-Sur-Saône F-59000 Lille France)

13:50 - 14:10
A numerical study on passive suppression of vortex-induced vibration (VIV) using an elastic rotative non-linear vibration absorber
FRANZINI Guilherme*
*Escola Politecnica da Universidade de Sao Paulo [Sao Paulo] (Av. Prof. Luciano Gualberto, 380 - Butantã, São Paulo - SP, 05508-010 Brazil)

14:10 - 14:30
Broadband vibration energy harvesting based on a weakly coupled nonlinear periodic system
AOUALI Kaouthar, BOUHADDI Noureddine, **KACEM Najib***
*Univ. Bourgogne Franche-Comté, FEMTO-ST Institute, Department of Applied Mechanics (25000 BESANCON France)

14:30 - 14:50
Determination of performance parameters of nonlinear galloping energy harvesters using Jacobi elliptic functions
SARBINOWSKI Filip*, STAROSTA Roman
*Poznań University of Technology, Institute of Applied Mechanics (Jana Pawła II 24, 60-965 Poznań, Poland Poland)

14:50 - 15:10
Dynamic instability mitigation using a single nonlinear energy sink in a friction system with two unstable modes
BERGEOT Baptiste*, BELLIZZI Sergio, BERGER Sébastien
*Institut National des Sciences Appliquées - Centre Val de Loire (campus de Blois) (3 rue de la chocolaterie, CS 23410, 41034 Blois cedex France)

Monday, July 18, 2022

13:30 - 15:30

MS-07 Dynamics and Optimization of Multibody Systems

Saint Clair 2

Chair: József Kövecses - Marek Wojtyra

13:30 - 13:50
Application of the ODE Integration Methods for Multibody Systems With and Without Redundant Constraints
PĘKAL Marcin*, WOJTYRA Marek
*Warsaw University of Technology, Institute of Aeronautics and Applied Mechanics (Nowowiejska 24, 00-665 Warsaw Poland)

13:50 - 14:10
A rockfall simulation scheme which preserves the stability properties of rotating rocks
LEINE Remco*, CAPOBIANCO Giuseppe, BARTELT Perry, LU Guang
*Institute for Nonlinear Mechanics (Pfaffenwaldring 9, 70569, Stuttgart Germany)

14:10 - 14:30
A Three-Dimensional and Nonlinear Virtual Test Car
RILL Georg*
*OTH Regensburg (Galgenbergstr. 30, 93053 Regensburg Germany)

14:30 - 14:50
Abscissa minimization for self-stability of bicycles and nonholonomic acceleration when riding out of the saddle
KIRILLOV Oleg*
*Northumbria University (Northumbria University Mathematics, Physics and Electrical Engineering Ellison Building, D219 Newcastle upon Tyne NE1 8ST United Kingdom)

14:50 - 15:10
An original walking composed of a ballistic single-support and a finite time double-support phases
AOUSTIN Yannick*, FORMALSKII Alexander
*LS2N, Université de Nantes (1 rue de la Noë, 44321 Nantes France)

Monday, July 18, 2022

13:30 - 15:30

MS-14 Nonlinear Dynamics for Engineering Design

Rhone 2

Chair: Stefano Lenci

13:30 - 13:50
Optimal design and tuning of an SMA-assisted PTMD system
MUCCHIELLI Paul*, GOGOI Ankush, HAZRA Budhaditya, PAKRASHI Vikram
*University College Dublin [Dublin] (Belfield, Dublin 4 Ireland)

13:50 - 14:10
Coupling of bio-inspired, nonlinear acoustic sensors for sound pre-processing and bandwidth tuning
VED Kalpan*, LENK Claudia, HÖVEL Philipp, ZIEGLER Martin
*Technische Universität Ilmenau (G.-Kirchhoff-Str. 1, 98693 Ilmenau Germany)

14:10 - 14:30
Dynamic loads produced by swinging bells ? experimental and numerical investigation of the novel yoke-bell-clapper system with variable geometry
BURZYŃSKI Tomasz*, BRZESKI Piotr, BALCERZAK Marek, PERLIKOWSKI Przemysław
*Division of Dynamics, Lodz University of Technology (90-924 Łódź, ul. Stefanowskiego 1/15 K-13, bud. A22 Poland Poland)

14:30 - 14:50
Experimentally validated geometrically exact model for nonlinear dynamic analysis of cantilevers undergoing extreme motions
FAROKHI Hamed*, XIA Yiwei, ERTURK Alper
*University of Northumbria at Newcastle (Newcastle City Campus, 2 Ellison Pl, Newcastle upon Tyne NE1 8ST, United Kingdom United Kingdom)

14:50 - 15:10
Model order reduction of nonlinear piezoelectric microstructures through direct parametrisation of invariant manifolds
OPRENI Andrea, VIZZACCARO Alessandra, TOUZÉ Cyril, **FRANGI Attilio***
*Politecnico di Milano (Piazza Leonardo da Vinci, 32 20133 Milano Italy)

15:10 - 15:30
Modeling Nonlinearities in MEMS Micro Mirrors: From Single Chip to Wafer Level
NABHOLZ Ulrike, MEHNER Jan, **DEGENFELD-SCHONBURG Peter***
*Robert Bosch GmbH, Corporate Research (71272 Renningen Germany)

Monday, July 18, 2022

13:30 - 15:30

MS-03 Computational Methods

Rhone 3A

Chair: Jan Sieber

13:30 - 13:50
A fast, efficient algorithm for quantification of rare events in dynamical systems
BLANCHARD Antoine*, SAPSIS Themistoklis
*Massachusetts Institute of Technology (77 Massachusetts Ave, Cambridge, MA 02139 United States)

13:50 - 14:10
A Multi-Dimensional Atlas Algorithm for Variable-Mesh Boundary-Value Problems
DANKOWICZ Harry*, WANG Yuqing, SCHILDER Frank, HENDERSON Michael
*University of Illinois at Urbana Champaign (University of Illinois at Urbana-Champaign, The Grainger College of Engineering, Department of Mechanical Science and Engineering, 1206 W. Green St, Urbana, IL 61801 United States)

14:10 - 14:30
A new co-simulation approach for mechanical systems with nonlinear components
NATSIAVAS Sotirios, **KOUTRAS Evangelos***, PARASKEVOPOULOS Elias
*Aristotle Un. (Thessaloniki Greece)

14:30 - 14:50
A numerical package for model order reduction of large dimensional finite element systems of nonlinear vibrating structures based on invariant manifold theory
OPRENI Andrea*, VIZZACCARO Alessandra, MARTIN Adrien, TOUZÉ Cyril, FRANGI Attilio
*Politecnico di Milano [Milan] (Piazza Leonardo da Vinci, 32 20133 Milano Italy)

14:50 - 15:10
A port-Hamiltonian formulation for the full von-Kármán plate model
BRUGNOLI Andrea*, MATIGNON Denis
*University of Twente (Drienerlolaan 5, 7522 NB Enschede Netherlands)

15:10 - 15:30
Analysis of Stable and Unstable Pedestrian Flow Situations in Particle Simulations and Evacuation Experiments
STARKE Jens*, PANAGIOTOPOULOS Ilias, SIEBER Jan, JUST Wolfram
*University of Rostock (Ulmenstr. 69, Haus 3 18057 Rostock Germany)

Monday, July 18, 2022

13:30 - 15:30

MS-05 Slow-Fast Systems and Phenomena

Saint Clair 1

Chair: Valery Pilipchuk

13:30 - 13:50
Adiabatic phenomena in particle accelerators
BAZZANI Armando*, CAPOANI Federico, GIOVANNOZZI Massimo
*Department of Physics and Astronomy University of Bologna and INFN sezione di Bologna, Italy (via Irnerio 46 40126 Bologna Italy)

13:50 - 14:10
A surface of connecting orbits between two saddle slow manifolds in a return mechanism of mixed-mode oscillations
KRAUSKOPF Bernd*, MUSOKE Elle, OSINGA Hinke M.
*Department of Mathematics, The University of Auckland (38 Princes Street, Auckland CBD, Auckland 1010 New Zealand)

14:10 - 14:30
Analysis of a Singularly Perturbed Continuous Piecewise Linear System
KAROUI A. Yassine*, LEINE Remco
*Institute for Nonlinear Mechanics, University of Stuttgart (Pfaffenwaldring 9 70569 Stuttgart Germany)

14:30 - 14:50
Bursting and Excitability in Neuromorphic Resonant Tunneling Diodes
JAVALOYES Julien*, IGNACIO Ortega-Piwonka
*Universitat de les Illes Balears (Cra. de Valldemossa, km 7.5. Palma Illes Balears Spain) - Departament de Fısica [Palma de Mallorca] (Universitat de les Illes Balears, E-07122 Palma de Mallorca, Spain Spain)

14:50 - 15:10
Delayed loss of stability in multiple time scale models of natural phenomena
SENSI Mattia*
*MathNeuro Team, Inria at Université Côte d'Azur (2004 Rte des Lucioles, 06410 Biot, France France)

Monday, July 18, 2022

13:30 - 15:50

MS-10 Non-Smooth Dynamics

Saint Clair 3A

Chair : Vincent Acary - Remco Leine

13:30 - 13:50
A new explicit CD-Lagrange scheme with redistributed mass for structural dynamics with impacts
DI Stasio Jean*, DUREISSEIX David, GRAVOUIL Anthony, GEORGES Gabriel, HOMOLLE Thomas
*Laboratoire de Mécanique des Contacts et des Structures [Villeurbanne] (Bâtiment Sophie Germain27b, avenue Jean CapelleF69621 VILLEURBANNE CEDEX France) - Centre de Technologie de Ladoux (Place des Carmes-Déchaux 63000 Clermont-Ferrand France)

13:50 - 14:10
Bifurcations in Piecewise Smooth, Delay Differential Systems
SHUKLA Amit*, STRIJBOSCH Nard, NIJMEIJER Henk
*Miami University (650 East High Street, Oxford, Ohio 45056 United States)

14:10 - 14:30
Coexistence of conservative and dissipative dynamics in forced vibro-impact oscillator with Amonton-Coulomb friction
KRAVETC Pavel*, GENDELMAN Oleg, RACHINSKII Dmitrii
*Department of Mechanical Engineering [Haifa] (Technion - Institute of Technology Haifa 32000 Israel Israel)

14:30 - 14:50
Compact weighted residual formulation for periodic solutions of systems undergoing unilateral contact and frictional occurrences
LEGRAND Mathias*, PIERRE Christophe
*Structural Dynamics and Vibration Laboratory, McGill University (Department of Mechanical Engineering, Room 122, McConnell Engineering Building, McGill University, 817 Sherbrooke St West, Montréal QC H3A 0C3 Canada)

14:50 - 15:10
Dynamic non-smooth fold bifurcations influenced by oscillations and noise
KUSKE Rachel*, BUDD Chris, GRIFFITH Cody
*Georgia Institute of Technology (Atlanta United States)

15:10 - 15:30
Effect of dry friction on a parametrically excited nonlinear oscillator
BENACCHIO Simon*, GIRAUD-AUDINE Christophe, THOMAS Olivier
*Arts et Metiers Institute of Technology, LISPEN, HESAM Université (F-59000 Lille France)

15:30 - 15:50
Experimental Verification of Stability Theory for a Planar Rigid Body with Two Unilateral Frictional Contacts
OR Yizhar*, VARKONYI Peter
*Department of Mechanical Engineering, Technion - Institute of Technology Haifa 32000 Israel (Technion - Institute of Technology Haifa 32000 Israel Israel)

Monday, July 18, 2022

13:30 - 15:30

MS-20 Wave propagation in Mechanical Systems and Nonlinear Metamaterials

Saint Clair 3B

Chair: Francesco Romeo

13:30 - 13:50
A nonlinear gradient elasticity model for the prediction of seismic waves
DOSTAL Leo, **HOLLM Marten***, METRIKINE Andrei, FĂRĂGĂU Andrei, VAN Dalen Karel
*Institute of Mechanics and Ocean Engineering, Hamburg University of Technology (Eissendorfer Strasse 42, 21073 Hamburg Germany)

13:50 - 14:10
Breather arrest in the damped chains with substantially nonlinear coupling
GENDELMAN Oleg*, VAKAKIS Alexander, STROZZI Matteo, MOJAHED Alireza
*Department of Mechanical Engineering (Technion - Institute of Technology Haifa 32000 Israel Israel)

14:10 - 14:30
Free propagation of nonlinear waves in 1D acoustic metamaterials with inertia amplification
SETTIMI Valeria, **LEPIDI Marco***, BACIGALUPO Andrea
*Department of Civil, Chemical and Environmental Engineering - University of Genoa (Via Montallegro

14:30 - 14:50
Nonlinear dynamics of topological lattices
CHAUNSALI Rajesh*, THEOCHARIS Georgios
*Laboratoire dÁcoustique de lÚniversité du Mans (Laboratoire dÁcoustique de lÚniversité du Mans, LAUM - UMR 6613 CNRS, Le Mans Université, Avenue Olivier Messiaen, 72085 LE MANS France)

Monday, July 18, 2022

16:00 - 18:20

MS-04 Experiments in Nonlinear Dynamics and Control

Rhone 3B

Chair: Emmanuel Rigaud

16:00 - 16:20
Optimal Controller Gain for the Control Based Continuation of a Duffing oscillator
KLEYMAN Gleb, **TATZKO Sebastian***, WALLASCHEK Jörg
*Institute of Dynamics and Vibration Research (An der Universität 1 30823 Garbsen Germany)

16:20 - 16:40
Nonlinear localisation in a cyclic system with unilateral contact
NIEDERGESÄSS Björn*, GROLET Aurelien, HOFFMANN Norbert
*Hamburg University of Technology (Eißendorfer Str. 40 21073 Hamburg Germany)

16:40 - 17:00
Nonlinear modes of cantilever beams at extreme amplitudes: numerical computation and experiments
DEBEURRE Marielle*, GROLET Aurelien, THOMAS Olivier, MATTEI Pierre-Olivier, COCHELIN Bruno
*Arts et Métiers Institute of Technology (8 Boulevard Louis XIV F-59000 Lille France)

17:00 - 17:20
Nonlinear Motions of a Self-adaptive Resonator
SUGIURA Toshihiko*, OCHIAI Koki, LIU Xuefeng, OIKAWA Yuki, PENG Linyu
*Mechanical Engineering, Keio University (3-14-1 Hiyoshi, Kohoku, Yokohama Japan)

17:20 - 17:40
Measuring nonlinear localisation and isolated curve of solutions in a system of two coupled beams
GROLET Aurelien*, THOMAS Olivier, SHAMI Zein Alabidin
*Laboratoire d'Ingénierie des Systèmes Physiques et Numériques (Arts et Métiers - Campus d'Aix-en-Provence2, cours des Arts et Métiers, 13617 AIX EN PROVENCETél.: +33 (0)4 42 93 81 41Laboratoire d'Ingénierie des Systèmes Physiques et numériques (LISPEN EA7515)Arts et Métiers - Campus de Lille8 bd Louis XIV - 59046 Lille CedexTél.: +33 (0)4 42 93 81 41Laboratoire d'Ingénierie des Systèmes Physiques et numériques (LISPEN EA7515)Arts et Métiers - Campus de Cluny (Institut Image de Chalon-sur-Saône)2 rue Thomas Dumorey 71100 CHÂLONS-SUR-SAONETél.: +33 (0)3 85 90 98 60 France)

17:40 - 18:00
Experimental nonlinear dynamic analysis of a machine supporting beam
BRASIL Reyolando*, GARZERI Flavio, BIRCH Robert
*Federal University of ABC (Alameda da Universidade, SN, São Bernardo do Campo, SP Brazil)

Monday, July 18, 2022

16:00 - 18:00

MS-15 Energy Transfer and Harvesting in Nonlinear Systems

Rhone 1

Chair: Lawrence Bergman

16:00 - 16:20
Dynamical analysis of TET in a non-smooth vibro-impact system
LIU Ruofeng, COSTA Dimitri, YURCHENKO Daniil, **KUSKE Rachel***
*Georgia Institute of Technology (Atlanta United States)

16:20 - 16:40
Energy harvesting from vortex induced vibration in MEMS devices using magnetic interaction
NAMBIAR Amal*, PANDEY Manoj
*Amal Nambiar (IIT Madras, Tamil Nadu, India India)

16:40 - 17:00
Frequency-Energy Plot of Unsymmetrical Nonlinear Energy Sink
AL-SHUDEIFAT Mohammad*
*Mohammad A AL-Shudeifat (Khalif Khalifa University United Arab Emirates)

17:00 - 17:20
Escape of two-DOF dynamical system from the potential well
ENGEL Amit*, GENDELMAN Oleg, EZRA Tal, FIDLIN Alexander
*Technion institute of technology (The Technion, Haifa Israel)

Monday, July 18, 2022

16:00 - 18:20

MS-14 Nonlinear Dynamics for Engineering Design

Rhone 2

Chair: Bogdan Epureanu - Daniele Zulli

16:00 - 16:20
Multiple scale expansion and frequency-response curves of a nonlinear beam model
BABILIO Enrico*, LENCI Stefano, SACCO Elio
*Department of Structures for Engineering and Architecture (DiSt), University of Naples "Federico II" (via Forno Vecchio 36 - 80134, Naples Italy)

16:20 - 16:40
Non-linear dynamics of straight beamswith (orwithout)shape imperfections and very shallow arcs: similarities and differences controlled by boundary conditions
PAULS Vitaly*, LENCI Stefano, SOROKIN Sergey
*Polytechnic University of Marche (60131 Ancona Italy)

16:40 - 17:00
Low Voltage Operation of Vilnius Chaotic Oscillator
PIKUĻINS Dmitrijs*, SERGEJS Tjukovs, IHEANACHO Chukwuma Victor, ALEKSANDRS Ipatovs, GRIZANS Juris
*Institute of Radioelectronics, Riga Technical University (Azenes st. 12, Riga Latvia)

17:00 - 17:20
Nonlinearity in estimating bolt tension from vibrations
BRØNS Marie*, THOMSEN Jon
*Technical University of Denmark [Lyngby] (Anker Engelunds Vej 1, Building 101A, 2800 Kgs. Lyngby Denmark)

17:20 - 17:40
On the reliability of contact models in Vibro-Impact Nonlinear Energy Sinks
LO Feudo Stefania*, JOB Stéphane, CAVALLO Miriam, FRADDOSIO Aguinaldo, PICCIONI Mario Daniele, TAFUNI Alessandro
*Laboratoire QUARTZ (ISAE Supméca - 3 rue Fernand Hainaut - 93400 Saint-Ouen cedex France)

Monday, July 18, 2022

16:00 - 18:20

MS-03 Computational Methods

Rhone 3A

Chair: Jan Sieber

16:00 - 16:20
A rapid iterative procedure for dynamic integrity assessment
HABIB Giuseppe*
*MTA-BME Lendület Machine Tool Research Group, Department of Applied Mechanics, Budapest University of Technology and Economics (Budapest, Muegyetem rkp. 3. Hungary)

16:20 - 16:40
An Efficient Implementation for the Analysis of Extrema in Dynamical Systems with Delay
AHSAN Zaid*, LI Mingwu, DANKOWICZ Harry, SIEBER Jan
*Department of Mechanical Science and Engineering, University of Illinois at Urbana-Champaign (Urbana,IL United States)

16:40 - 17:00
Non-Conservative Nonlinear Modes Through Energy Resonance
ALCORTA Roberto*, GRENAT Clément, PRABEL Benoit, BAGUET Sébastien
*INSA Lyon, LaMCoS, University of Lyon (69621 Villeurbanne France) - CEA, University of Paris-Saclay (91191 Gif-sur-Yvette France)

17:00 - 17:20
Differential geometric PDE bifurcation problems in pde2path
UECKER Hannes, **MEINERS Alexander***
*Institut für Mathematik (Carl von Ossietzky Universität Oldenburg, Ammerländer Heerstr. 114, D- 26129 Oldenburg Germany)

17:20 - 17:40
Combinatorial models of global dynamics: learning cycling motion from data
BAUER Ulrich, **HIEN David***, JUNGE Oliver, MISCHAIKOW Konstantin, SNIJDERS Max
*Department of Mathematics, Technical University of Munich (Boltzmannstrasse 3 D-85747 Garching Germany)

Monday, July 18, 2022

16:00 - 18:20

MS-05 Slow-Fast Systems and Phenomena

Saint Clair 1

Chair: Bernd Krauskopf

16:00 - 16:20
Stability of a driver-vehicle system with steering and throttle control
EDELMANN Johannes*, PLÖCHL Manfred, STEINDL Alois
*TU Wien (Getreidemarkt 9 1060 Wien Austria)

16:20 - 16:40
Nonlinear Oscillations of Acoustic Shock Waves in a Cylindrical Tube
SØRENSEN Mads*, RASMUSSEN Anders, CHRISTIANSEN Peter
*Department of Applied Mathematics and Computer Science, Technical University of Denmark (Richard Petersens Plads, Bldg. 324, DK-2800 Kongens Lyngby Denmark)

16:40 - 17:00
Controlling canard cycles
JARDON Hildeberto*, KUEHN Christian
*Technical University of Munich (Boltzmannstr. 3 85748 Garching bei München, Germany Germany)

17:00 - 17:20
Non-smooth Two Variable Expansions for Separation of Motions In Impact and Impulsively Loaded Oscillators
PILIPCHUK Valery*
*Wayne State University (5050 Anthony Wayne Dr., 2118 Detroit, Michigan 48202 United States)

Monday, July 18, 2022

16:00 - 18:20

MS-07 Dynamics and Optimization of Multibody Systems

Saint Clair 2

Chair: József Kövecses - Marek Wojtyra

16:00 - 16:20
Coupled Vehicle-Guideway Dynamics Simulations of the Transrapid with Discretized Levitation Magnet Forces
SCHNEIDER Georg*, SCHMID Patrick, DIGNATH Florian, EBERHARD Peter
*Institute of Engineering and Computational Mechanics, University of Stuttgart (Pfaffenwaldring 9, 70569 Stuttgart Germany)

16:20 - 16:40
Joint Reactions Distribution and Uniqueness in Overactuated Multibody Systems
WOJTYRA Marek*, PĘKAL Marcin
*Warsaw University of Technology, Institute of Aeronautics and Applied Mechanics (Nowowiejska 24, 00-665 Warsaw Poland)

16:40 - 17:00
Flight Behaviour of a Two-Line, Four-Point Disk Kite
ROEVEN Luke*, GUTSCHMIDT Stefanie, ALEXANDER Keith
*L Roeven (University of Canterbury, Mechanical Engineering Department New Zealand)

17:00 - 17:20
Identification of Friction Models for MPC-based Control of a Power-Cube Serial Robot
FEHR Joerg, **KARGL Arnim***, HANNES Eschmann
*Institute of Engineering and Computational Mechanics, University of Stuttgart (Pfaffenwaldring 9, 70569 Stuttgart Germany)

Monday, July 18, 2022

16:00 - 18:40

MS-10 Non-Smooth Dynamics

Saint Clair 3A

Chair : Remco Leine - Vincent Acary

16:00 - 16:20
Equilibrium of a non-compressible cable subjected to unilateral constraints
BERTRAND Charlélie*, LAMARQUE Claude-Henri, ACARY Vincent, TURE Savadkoohi Alireza
*Laboratoire de Tribologie et Dynamique des Systèmes (3, Rue Maurice Audin, 69518 Vaulx en Velin (CEDEX) France)

16:20 - 16:40
Trajectory Tracking Control for Linear Complementarity Systems with Continuous Solutions
VO Van Nam, **BROGLIATO Bernard***, PRIEUR Christophe
*INRIA Grenoble-Alpes (Inovallée 38334 Montbonnot France)

16:40 - 17:00
Identification and validation of impact models
JONGENEEL Maarten*, WOUW Nathan, SACCON Alessandro
*Eindhoven University of Technology (5612 AZ Eindhoven Netherlands)

17:00 - 17:20
Multiple impacts in granular chains with Kuwabara-Kono dissipation
JAMES Guillaume*, VOROTNIKOV Kirill, BROGLIATO Bernard
*TRIPOP Team (655 avenue de l'Europe, 38334 Saint-Ismier France)

17:20 - 17:40
Non-smooth dynamics modeling of drill-string systems in heterogeneous formations
ARIBOWO Arviandy*, WILDEMANS Roeland, DETOURNAY Emmanuel, VAN De Wouw Nathan
*Eindhoven University of Technology (Den Dolech 2, 5612 AZ, Eindhoven Netherlands)

17:40 - 18:00
Nonlinear granular damping of structures with cavities from additive manufacturing
TATZKO Sebastian*, EHLERS Tobias, KLEYMAN Gleb, LACHMAYER Roland
*Institute of Dynamics and Vibration Research (Appelstraße 11, 30167 Hannover Germany)

18:00 - 18:20
A Nonsmooth Approach for Generating Convex Relaxations of Dynamic Systems
SONG Yingkai*, KHAN Kamil
*Department of Chemical Engineering, McMaster University (1280 Main St W, Hamilton, ON L8S 4L8 Canada)

18:20 - 18:40
Nonsmooth Modal Analysis of Varying Cross-section Bar
LU Tianzheng*, LEGRAND Mathias
*Structural Dynamics and Vibration Laboratory, McGill University (Department of Mechanical Engineering, Room 122, McConnell Engineering Building, McGill University, 817 Sherbrooke St West, Montréal QC H3A 0C3 Canada)

Monday, July 18, 2022

16:00 - 18:20

MS-20 Wave propagation in Mechanical Systems and Nonlinear Metamaterials

Saint Clair 3B

Chair: Marco Lepidi

16:00 - 16:20
Theory of harmonic generation in nonlinear elastic waves
KHAJEHTOURIAN Romik, **HUSSEIN Mahmoud***
*University of Colorado Boulder (3775 Discovery Drive, Boulder, CO 80303, USA United States)

16:20 - 16:40
Shocks and solitary waves in series connected discrete Josephson transmission lines
KOGAN Eugene*
*Bar-Ilan University (Department of Physics, Bar-Ilan University, Ramat-Gan 52900 Israel)

16:40 - 17:00
Tunable interface states in locally resonant acoustic chains with inerters
CAJIC Milan*, KARLIČIĆ Danilo, PAUNOVIĆ Stepa, ADHIKARI Sondipon
*Faculty of Science and Engineering, Swansea University (Fabian Way, Crymlyn Burrows, Skewen, Swansea SA1 8EN United Kingdom)

17:00 - 17:20
Nonlinear Wave Disintegration in Phononic Material with Weakly Compressed Rough Contacts
PATIL Ganesh*, MATLACK Kathryn
*Department of Mechanical Science and Engineering, University of Illinois at Urbana Champaign (Sidney Lu Mechanical Engineering Building 1206 W. Green St. MC 244 Urbana, IL 61801 United States)

Tuesday, July 19, 2022

08:30 - 10:30

MS-21 Nonlinear Dynamics in Acoustics

Saint Clair 2

Chair: Michele Ducceschi

08:30 - 08:50
A Partitioned Finite Element Method (PFEM) for power-preserving discretization of port-Hamiltonian systems (pHs) with polynomial nonlinearity
MATIGNON Denis, CARDOSO-RIBEIRO Flávio Luiz, **LEFÈVRE Laurent***
*Laboratoire de Conception et dÍntégration des Systèmes (50, rue Barthélémy de Laffemas BP54 26902 VALENCE Cedex 09 France France)

08:50 - 09:10
Analytical 1D model of the flow-structure interaction in snoring and sleep apnea
SOARES Filipe*, ANTUNES José, DEBUT Vincent, VERGEZ Christophe, SILVA Fabrice, COCHELIN Bruno
*Instituto Superior Tecnico [Lisboa] (Av. Rovisco Pais, 1 1049-001 Lisboa Portugal)

09:10 - 09:30
Exploiting nonlinear dynamics for manipulation of acoustically levitated particles
BUCHER Izhak*, DOLEV Amit
*Izhak Bucher (Dynamics Laboratory Israel)

09:30 - 09:50
Cristal Baschet: minimal model to predict the emergence of self-sustained oscillations
COUINEAUX Audrey*, GAUTIER François, ABLITZER Frédéric
*Laboratoire d'Acoustique de l'Université du Mans, CNRS UMR 6613, Le Mans, France (Avenue Olivier Messiaen 72085 LE MANS CEDEX 9 France)

Tuesday, July 19, 2022

08:30 - 10:30

MS-04 Experiments in Nonlinear Dynamics and Control

Rhone 3B

Chair: Guilhem Michon

08:30 - 08:50
Parametrically driven morphing of thin piezoelectric surfaces
CARBONI Biagio*, CATARCI Stefano, LACARBONARA Walter
*Department of Structural and Geotechnical Engineering Sapienza University [Rome] (Sapienza Università di Roma, Via Eudossiana 18, 00184 Roma Italy)

08:50 - 09:10
Particle Damping of Floating Oscillating Surge Wave Energy Converters
HAJJ Muhammad*, SHALABY Ahmed, AHMED Alaa, DATLA Raju, MASRI Sami, MI Jia, ZUO Lei
*Civil, Environmental and Ocean Engineering, Stevens Institute of Technology (Hoboken, NJ 07030 United States)

09:10 - 09:30
[no show] Systematic design of particle dampers for low frequency horizontal vibrations
NIKLAS Meyer*, SEIFRIED Robert
*Institute of Mechanics and Ocean Engineering, Hamburg University of Technology (TUHH) (Eißendorfer Straße 42, 21073 Hamburg, Germany Germany)

09:30 - 09:50
Tracing periodic solutions in noise-contaminated experiments
BEREGI Sandor*, BARTON David, REZGUI Djamel, NEILD Simon, SYKORA Henrik
*Faculty of Engineering [Bristol] (University of Bristol, Senate House, Tyndall Avenue, Bristol BS8 1TH, UK United Kingdom)

09:50 - 10:10
Active Vibration Mitigation of High Modal Density of BLUM with Piezoelectric Patches
JAMSHIDI Rasa*, COLLETTE Christophe
*Université de Liège - Faculté des sciences appliquées (Quartier Polytech 1 - Allée de la Découverte, 12 - Sart Tilman - 4000 Liège Belgium)

Tuesday, July 19, 2022

08:30 - 10:30

MS-01 Reduced-Order Modeling and System Identification

Saint Clair 3B

Chair: Majdi Gzal

08:30 - 08:50

Comparison of nonlinear methods for reduced-order modeling of geometrically nonlinear structures

TOUZÉ Cyril*, VIZZACCARO Alessandra, THOMAS Olivier, SALLES Loic, OPRENI Andrea, SHEN Yichang, FRANGI Attilio

*Institute of Mechanical Science and Industrial Applications (Unité de Mécanique, IMSIA 828 Boulevard des Maréchaux 91762 Palaiseau Cedex France)

08:50 - 09:10

Finite elements based reduced order models for geometrically nonlinear and piezoelectric thin structures: validation and three-dimensional effects

THOMAS Olivier*, VIZZACARRO Alessandra, GIVOIS Arthur, GROLET Aurelien, SALLES Loïc, DEÜ Jean-François, TOUZE Cyril

*Laboratoire d'Ingénierie des Systèmes Physiques et Numériques (Arts et Métiers - Campus d'Aix-en-Provence2, cours des Arts et Métiers, 13617 AIX EN PROVENCETél.: +33 (0)4 42 93 81 41Laboratoire d'Ingénierie des Systèmes Physiques et numériques (LISPEN EA7515)Arts et Métiers - Campus de Lille8 bd Louis XIV - 59046 Lille CedexTél.: +33 (0)4 42 93 81 41Laboratoire d'Ingénierie des Systèmes Physiques et numériques (LISPEN EA7515)Arts et Métiers - Campus de Cluny (Institut Image de Chalon-sur-Saône)2 rue Thomas Dumorey 71100 CHÂLONS-SUR-SAONETél.: +33 (0)3 85 90 98 60 France)

09:10 - 09:30

Asymptotic Computation of Invariant Manifolds of large Finite Element structures with Geometric Nonlinearities

VIZZACCARO Alessandra*, OPRENI Andrea, SALLES Loic, FRANGI Attilio, TOUZÉ Cyril

*Department of Mechanical Engineering [Imperial College London] (Imperial College London, London SW7 2AZ United Kingdom) - Faculty of Engineering [Bristol] (University of Bristol, Senate House, Tyndall Avenue, Bristol BS8 1TH, UK United Kingdom)

09:30 - 09:50

Data-driven aerodynamic models for reduced-order aeroelastic simulations

HORVÁTH Dávid András*, LELKES János

*Budapest University of Technology and Economics, Faculty of Mechanical Engineering, Department of Fluid Dynamics (1111 Budapest, Bertalan Lajos Street 4-6. Hungary Hungary)

09:50 - 10:10

Development and Parameter Estimation of a Low Order Model of a Hyperelastic Plate Exhibiting 2:1 Resonant Response

JABER Nizar, **BILAL Nasir***, BAJAJ Anil

*Purdue University (West Lafayette, IN 47907 United States) - School of Mechanical Engineering, Purdue University, West Lafayette, IN 47907, USA (West Lafayette, IN 47907, USA United States)

Tuesday, July 19, 2022

08:30 - 10:30

MS-14 Nonlinear Dynamics for Engineering Design

Rhone 2

Chair: Jon Juel Thomsen

08:30 - 08:50
Parametric analysis of a Nonlinear Energy Sink for an unstable dynamic system
TANAYS Rémy*, SANCHES Leonardo, MICHON Guilhem
*Institut Supérieur de lÁéronautique et de lÉspace (ISAE - 10 av. Edouard Belin - BP 54032 - 31055 TOULOUSE Cedex 4 France)

08:50 - 09:10
Parametric and Self-excitation of a Suspension Bridge under Turbulent Wind Flow
DI Nino Simona*, LUONGO Angelo
*Department of Civil, Construction-Architectural and Environmental Engineering, University of L'Aquila (67100 L'Aquila Italy) - International Research Center for the Mathematics & Mechanics of Complex Systems (University of L'Aquila, 67100 L'Aquila Italy)

09:10 - 09:30
Shape Optimization of Curved Mechanical Beams for Zero-Dispersion Point
ROSENBERG Sahar*, SHOSHANI Oriel
*Ben-Gurion University of the Negev (Ben Gurion Blvd, 1, Be'er Sheva 84105, Israel Israel)

09:30 - 09:50
Recent advances on spectral-submanifold-based model reduction: bifurcations and configuration constraints
LI Mingwu*, JAIN Shobhit, HALLER George
*ETH Zürich (Leonhardstrasse 21, 8092, Zürich Switzerland)

09:50 - 10:10
Reduced-Order Modelling of Moore-Greitzer PDEs using Sparse Regression
AYDOGDU Yusuf, **RAVICHANDRAN Thambirajah***, NOVELIA Alyssa, NAMACHCHIVAYA Navaratnam Sri
*Department of Applied Mathematics, University of Waterloo (200 University Avenue West, Waterloo, Ontario N2L 3G1 Canada)

Tuesday, July 19, 2022

08:30 - 10:30

MS-13 Nonlinear Dynamics in Biological Systems

Saint Clair 3A

Chair: Gert Van Der Heijden

08:30 - 08:50
3D FEM Model of Intact Human Middle Ear Compared to Lumped Mass Model and Experimental Results
ZABLOTNI Robert*, RUSINEK Rafal
*Department of Applied Mechanics, Lublin University of Technology, Poland (Nadbystrzycka 36, 20-618 Lublin, Poland Poland)

08:50 - 09:10
Computational model of Deep Brain Stimulation (DBS). Transitions from Healthy to Parkinsonian and DBS treatment.
SPILIOTIS Konstantinos*, STARKE Jens
*Institute of Mathematics, (Ulmenstraße 69, Haus 3 18057 Rostock Germany)

09:10 - 09:30
Cracking Down on Criminals: A Mathematical Model Expoloring Strategies for Curbing Criminal Behaviour
COMISSIONG Donna*, SOOKNANAN Joanna
*The University of the West Indies, St Augustine Campus, Trinidad (Department of Mathematics and Statistics, Faculty of Science and Technology, The University of The West Indies, St Augustine Campus, Trinidad, West Indies. Trinidad and Tobago)

09:30 - 09:50
Equilibrium Bifurcation Analysis of Nonlinear Biochemical Systems using Control-based Continuation and Model Predictive Control
DE Cesare Irene*, MARUCCI Lucia, RENSON Ludovic
*Engineering Mathematics Department [Bristol] (University of Bristol, Senate House, Tyndall Avenue, Bristol BS8 1TH, UK United Kingdom)

09:50 - 10:10
Forced Lotka-Volterra system for bone mechanobiology
SIMONOVIC Julijana*, WOOLLEY Thomas
*Faculty of Mechanical Engineering University of Nis, Serbia (A. Medvedeva 14, 18000 Nis Serbia)

Tuesday, July 19, 2022

08:30 - 10:30

MS-16 Random Dynamical Systems - Recent Advances and New Directions

Saint Clair 1

Chair: Rachel Kuske

08:50 - 09:10
An efficient method to obtain the response PDF of nonlinear stochastic dynamical systems
SYKORA Henrik, **KUSKE Rachel***, YURCHENKO Daniil
*Georgia Institute of Technology (Atlanta United States)

09:10 - 09:30
Integral feedback in synthetic biology: Negative-equilibrium catastrophe
PLESA Tomislav*, DACK Alex, OULDRIDGE Thomas
*University of Cambridge (Department of Applied Mathematics and Theoretical Physics, University of Cambridge, Wilberforce Road, Cambridge, CB3 0WA, UK United Kingdom)

09:30 - 09:50
Dynamical Analysis of a Multibody Wave Energy Converter excited by Random Waves
HOLLM Marten*, DOSTAL Leo, HÖHNE Joshua, SEIFRIED Robert
*Institute of Mechanics and Ocean Engineering, Hamburg University of Technology (Eissendorfer Strasse 42, 21073 Hamburg Germany)

09:50 - 10:10
Stochastic excitation source modeling for roughness-induced normal vibration at dry sliding conformal contacts under light load
PERRET-LIAUDET Joel*, PONTHUS Nicolas, ZOUABI Chaima, SCHEIBERT Julien
*Laboratoire de Tribologie et Dynamique des Systèmes (Ecole Centrale de Lyon. 36 avenue Guy de Collongue. 69134 ECULLY cedex France)

Tuesday, July 19, 2022

08:30 - 10:30

MS-03 Computational Methods

Rhone 3A

Chair: Harry Dankowicz

08:30 - 08:50
Analysis of coupled non-linear oscillators by the Asymptotic Numerical Method
CALBRIX Leopold, **GIRAULT Gregory***, CADOU Jean-Marc
*Centre de Recherche - Académie Militaire de Saint-Cyr Coëtquidan (Camp de Saint-Cyr Coëtquidan 56381 Guer Cedex France) - Institut de Recherche Dupuy de Lôme (Rue Saint-Maudé BP 9211656321 LORIENT cedex France)

08:50 - 09:10
Control-based continuation of orbits with complex time profile
SIEBER Jan*, QUINN Courtney
*College of Engineering, University of Exeter (Exeter United Kingdom)

09:10 - 09:30
New MatCont and a numerical bifurcation study of a perception problem in psychophysics
GOVAERTS Willy*, KUZNETSOV Yuri, MEIJER Hil, NEIRYNCK Niels, VAN Wezel Richard
*Department of Applied Mathematics, Computer Science and Statistics, Gent University, Belgium (Krijgslaan 281 - Building S9, 9000 Ghent, Belgium Belgium)

09:30 - 09:50
Finding connecting orbits between saddle periodic orbits as organising centres of complicated dynamics
WONG Nelson, **OSINGA Hinke***, KRAUSKOPF Bernd
*Department of Mathematics, University of Auckland, (The University of Auckland Private Bag 92019 Auckland 1142 New Zealand New Zealand)

Tuesday, July 19, 2022

08:30 - 10:30

MS-15 Energy Transfer and Harvesting in Nonlinear Systems

Rhone 1

Chair: Alireza Ture Savadkoohi

08:30 - 08:50
Intense modal energy exchanges in a cantilever beam with a local geometrically nonlinear boundary condition: Simulation and experiment
MOJAHED Alireza, LIU Yang, **BERGMAN Lawrence***, VAKAKIS Alexander
*University of Illinois at Urbana-Champaign (Urbana, IL United States)

08:50 - 09:10
Intermodal targeted energy transfer in a blast-excited 2D linear system with an elliptical hole
VELTMAN Yuval*, GZAL Majdi, GENDELMAN Oleg
*Yuval Veltman (Haifa, Technion, 3200003 Israel)

09:10 - 09:30
Kapitza resistance in basic chain models with isolated defects
PAUL Jithu*, GENDELMAN Oleg
*PhD student (Faculty of Mechanical Engineering, Technion–Israel Institute of Technology Israel)

09:30 - 09:50
Modal interactions in a non-linear mass-in-mass periodic chain
FLOSI Jean*, TURE Savadkoohi Alireza, LAMARQUE Claude-Henri
*École Nationale des Travaux Publics de l'État (3, Rue Maurice Audin, 69518 Vaulx en Velin (CEDEX) France)

09:50 - 10:10
Nonlinear dynamics of a resiliently propped cantilevered beam with a tip mass
TALEBI Bidhendi M. Reza*, PHANI A. Srikantha
*Department of Mechanical Engineering, University of British Columbia, Vancouver, Canada (Department of Mechanical Engineering, 6250 Applied Science Lane, Vancouver, BC, V6T1Z4 Canada)

10:10 - 10:30
Passive control of galloping vibrations by means nonlinear energy sinks
IGNÁCIO Da Silva José Augusto*, SANCHES Leonardo, MARQUES Flávio
*School of Engineering of São Carlos (Av. Trab. São Carlense, 400 - Parque Arnold Schimidt, São Carlos - SP, 13566-590 Brazil)

Tuesday, July 19, 2022

08:30 - 10:30

MS-09 Nonlinear Dynamics in Engineering Systems

Auditorium Lumiere

Chair: Francesco Pellicano - Yury Vetyukov

08:30 - 08:50
Controlling orbits in nonlinear vibration energy harvesters dynamics
SAINT-MARTIN Camille*, MOREL Adrien, CHARLEUX Ludovic, ROUX Émile, BADEL Adrien
*Laboratoire SYstèmes et Matériaux pour la MEcatronique (Maison de la mécatronique 7, chemin de Bellevue 74940 Annecy-le-Vieux France)

08:50 - 09:10
Degradation at transition zones in railway tracks: 1-D and 2-D model comparison
FĂRĂGĂU Andrei*, METRIKINE Andrei, VAN Dalen Karel
*Faculty of Civil Engineering and Geosciences, Delft University of Technology (Stevinweg 1, 2628 CN, Delft Netherlands)

09:10 - 09:30
Dynamic response assessment of impact meta-dampers
CHONDROGIANNIS Kyriakos Alexandros*, DERTIMANIS Vasilis, MASRI Sami, CHATZI Eleni
*Institute of Structural Engineering [ETH Zürich] (Stefano-Franscini-Platz 5, 8093 Zürich Switzerland)

09:30 - 09:50
Dynamics of Piecewise Linear Mathieu Equation with Non-Zero Offset
K R Jayaprakash, **STAROSVETSKY Yuli***
*Department of Mechanical Engineering [Haifa] (Technion - Institute of Technology Haifa 32000 Israel Israel)

09:50 - 10:10
Estimation of downhole and bit-rock interaction parameters in real-time using an adaptive observer for drilling processes
KANDALA Shanti Swaroop*, SHOR Roman
*Postdoctoral Associate (Department of Chemical and Petroleum Engineering, University of Calgary, Calgary, Alberta Canada)

10:10 - 10:30
Analysis of an hydraulic switching converter with analog hysteresis feedback control
ZAGAR Philipp*, SCHEIDL Rudolf
*Johannes Kepler University Linz, Institute of Machine Design and Hydraulic Drives (Altenbergerstr 69, 4040 Linz Austria)

Tuesday, July 19, 2022

13:30 - 15:30

MS-01 Reduced-Order Modeling and System Identification

Saint Clair 3B

Chair: Lawrence Bergman

13:30 - 13:50
A Reduced Order Model for Steady State Response of Joint Assemblies by Hyper-Reduction and Model-Driven Sampling
MORSY Ahmed*, TISO Paolo, KAST Mariella
*ETH Zürich (Leonhardstrasse 21, 8092 Zürich, Switzerland Switzerland)

13:50 - 14:10
Error estimates for model order reduction of Burgers' equation
ABBASI Mohammad Hossein*, IAPICHINO Laura, BESSELINK Bart, SCHILDERS Wil, VAN De Wouw Nathan
*Eindhoven University of Technology (Eindhoven Netherlands)

14:10 - 14:30
Adaptive Modeling of Coupled Duffing Oscillators Using Machine Learning
LIU Zihan, KAMBALI Prashant, **NATARAJ C.***
*Villanova University (800 E. Lancaster Ave. Villanova, PA 19085 United States)

14:30 - 14:50
Model reduction for hyperbolic systems with application to managed pressure drilling
NADERI Lordejani Sajad, LEENEN Tom, BESSELINK Bart, SCHILDERS Wil, **WOUW Nathan***
*University of Minnesota [Minneapolis] (500 Pillsbury Drive S.E., Minneapolis, MN 55455-0116 United States) - Eindhoven University of Technology [Eindhoven] (Den Dolech 2 5612 AZ Eindhoven Netherlands)

14:50 - 15:10
Model updating for digital twins using Gaussian process inverse mapping models
KESSELS Bas*, KORVER Julian, FEY Rob, VAN De Wouw Nathan
*Technische Universiteit Eindhoven (Postbus 5135600 MB Eindhoven Netherlands)

15:10 - 15:30
Nonlinear Modal Testing of Structures with Nonlinear Dissipation
SCHEEL Maren*, KRACK Malte
*University of Stuttgart (Pfaffenwaldring 6 70569 Stuttgart Germany)

Tuesday, July 19, 2022

13:30 - 15:30

MS-21 Nonlinear Dynamics in Acoustics

Saint Clair 2

Chair: Olivier Thomas

13:30 - 13:50
Finite-time tracking control of a nonlinear string to reference dynamics
WIJNAND Marc*, HÉLIE Thomas, ROZE David
*Sciences et Technologies de la Musique et du Son (1 Place Igor Stravinsky 75004 PARIS France) - Sorbonne Université (15-21 Rue de l'École de Médecine, 75006 Paris France)

13:50 - 14:10
Non-periodic dynamics in a delay model of flute-like musical instruments
TERRIEN Soizic*, VERGEZ Christophe, FABRE Benoît, DE La Cuadra Patricio
*Laboratoire dÁcoustique de lÚniversité du Mans (Laboratoire dÁcoustique de lÚniversité du Mans, LAUM - UMR 6613 CNRS, Le Mans Université, Avenue Olivier Messiaen, 72085 LE MANS France)

14:10 - 14:30
Nonlinear damping laws preserving the eigenstructure of the momentum space for conservative linear PDE problems: a port-Hamiltonian modelling
HELIE Thomas*, MATIGNON Denis
*Sciences et Technologies de la Musique et du Son (1 Place Igor Stravinsky 75004 PARIS France)

14:30 - 14:50
Normal form based nonlinear modes: identification, experimental continuation and internal resonances applied to the acoustics of chinese gongs
THOMAS Olivier*, DENIS Vivien, JOSSIC Marguerite, CHRISTOPHE Giraud-Audine
*Arts et Metiers Institute of Technology, LISPEN, HESAM Université (F-59000 Lille France)

14:50 - 15:10
Numerical continuation of periodic solutions with constraints: application to a physical model of wind musical instrument
FRÉOUR Vincent*, GUILLOT Louis, MASUDA Hideyuki, VERGEZ Christophe, COCHELIN Bruno
*YAMAHA R&D division (10-1 Nakazawa-cho, Naka-ku, 450-8650 Hamamatsu Japan)

Tuesday, July 19, 2022

13:30 - 15:30

MS-13 Nonlinear Dynamics in Biological Systems

Saint Clair 3A

Chair: Gert Van Der Heijden

13:30 - 13:50
Musical tonality and nonlinear dynamics
BUKS Eyal*
*Technion (Haifa, Israel Israel)

13:50 - 14:10
Theoretical considerations of the mechanics of whisker sensors
STAROSTIN Eugene*, VAN Der Heijden Gert, GOSS Victor
*London South Bank University (103 Borough Road,London SE1 0AA United Kingdom)

14:10 - 14:30
Influence of mass on horizontal forced oscillations in oscillatory model of a young tree with branches
JOVANOVIC George*, HEDRIH Andjelka
*Mathematical Institute of Serbian Academy of Sciences and Arts (Kneza Mihaila 36, 11 000 Belgrade Serbia)

14:30 - 14:50
Influence of vaccination and social distancing on epidemic prevention
BATISTELA Cristiane*
*Escola Politecnica da Universidade de Sao Paulo [Sao Paulo] (Av. Prof. Luciano Gualberto, 380 - Butantã, São Paulo - SP, 05508-010 Brazil)

14:50 - 15:10
Dynamics of a Self-Propelled Soft Capsule Moving in the Small Intestine
TIAN Jiyuan, WANG Zepeng, **LIU Yang***, PRASAD Shyam
*University of Exeter (North Park Road, Exeter United Kingdom)

Tuesday, July 19, 2022

13:30 - 15:30

MS-08 Nonlinear Phenomena in Mechanical and Structural Systems

Rhone 3B

Chair: Jerzy Warminski

13:30 - 13:50
Application of proportional ?ghost? damping for sliding or yielding structures in time history dynamic analyses
BOUDY Bastien*, MOUSSALLAM Nadim, BIDET Jean-Paul
*Framatome (10 rue Juliette recamier 69006 Lyon France)

13:50 - 14:10
Basins of attraction for the model of rotating hub with two pendulums
SZMIT Zofia*, ANDONOVSKI Nemanja, STEFANO Lenci, WARMINSKI Jerzy
*Department of Applied Mechanics, Faculty of Mechanical Engineering, Lublin University of Technology (36 Nadbystrzycka St. 20-618 Lublin Poland)

14:10 - 14:30
Bifurcation Elimination in Rotor Gas Bearing Systems Applying Numerical Continuation with Embedded Design Optimization Scheme
PAPAFRAGKOS Panagiotis*, GAVALAS Ioannis, RAPTOPOULOS Ioannis, CHASALEVRIS Athanasios
*National Technical University of Athens [Athens] (Zografou Campus - 9, Iroon Polytechniou str - 15780 Zografou, Athens Greece)

14:30 - 14:50
Why does the tippedisk invert? Theory and experiments
SAILER Simon*, LEINE Remco
*Institute for Nonlinear Mechanics, University of Stuttgart (Pfaffenwaldring 9 70569 Stuttgart Germany)

14:50 - 15:10
Effect of Nonlinear Electromechanical Coupling in Implanted Middle Ear
RAFAL Rusinek*
*Lublin University of Technology (Nadbystrzycka 36, Lublin Poland)

Tuesday, July 19, 2022

13:30 - 15:30

MS-16 Random Dynamical Systems - Recent Advances and New Directions

Saint Clair 1

Chair: Rachel Kuske

13:30 - 13:50
Multiplicative Road Models with Bounded Realizations Applied in Non-Linear Vehicle Road Dynamics
WEDIG Walter*
*Karlsruher Institut für Technologie (P.O.box 3640, 76021 Karlsruhe Germany)

13:50 - 14:10
Multiscale analysis for traveling-pulse solutions to the stochastic FitzHugh-Nagumo equations
EICHINGER Katharina, **GNANN Manuel***, KUEHN Christian
*Delft Institute of Applied Mathematics (PO Box 5031 2600 GA Delft The Netherlands Netherlands)

14:10 - 14:30
Nonlinear and stochastic dynamics in a forced vibro-impact energy harvester
KUSKE Rachel*, YURCHENKO Daniil, SERDUKOVA Larissa
*Georgia Institute of Technology (Atlanta United States)

14:30 - 14:50
Probabilistic response of a vibration energy harvester for realistic torsional vibrations
ALEVRAS Panagiotis*, GUNN Ben, THEODOSSIADES Stephanos
*Department of Mechanical Engineering, School of Engineering, University of Birmingham (Birmingham United Kingdom)

14:50 - 15:10
Simulation of Road Surfaces Profiles by a Stochastic Parametrical Model
AMS Alfons*
*TU Freiberg (Lampadiusstr. 6, 09599 Freiberg Germany)

Tuesday, July 19, 2022

13:30 - 15:30

MS-12 Micro- and Nano-Electro-Mechanical Systems

Rhone 3A

Chair: S. Krylov

13:30 - 13:50
Electrostatic nonlinear trimming of ring-based MEMS coriolis vibrating gyroscopes
ARIFIN Davin*, MCWILLIAM Stewart
*University of Nottingham (University Park, Nottingham NG7 2RD United Kingdom)

13:50 - 14:10
Broadband parametric amplification for nonlinear micro ring gyroscopes
BARAKAT Ahmed A.*, HAGEDORN Peter
*Dynamics and Vibrations Group, Technical University of Darmstadt (Dolivostr. 15, Darmstadt. Germany) - Graduate School of Computational Engineering, Technical University of Darmstadt (Dolivostr. 15, Darmstadt. Germany) - Design and Engineering Dept., Ain Shams University (ElSarayat St. 1, Abbaseyya, Cairo Egypt)

14:10 - 14:30
Chaos in a non-linear non-buckled microresonator
DEFOORT Martial*, RUFER Libor, BASROUR Skandar
*Techniques of Informatics and Microelectronics for integrated systems Architecture (46 Av Félix Viallet 38031 GRENOBLE CEDEX 1 France)

Tuesday, July 19, 2022

13:30 - 15:30

MS-14 Nonlinear Dynamics for Engineering Design

Rhone 2

Chair: Guilherme Franzini

13:30 - 13:50
Revisiting The Nonlinear Free Vibrations of Hanging Cables - The Use of a Direct Approach on The Partial Differential Equations of Motion
VERNIZZI Guilherme, **LENCI Stefano***, FRANZINI Guilherme
*Università Politecnica delle Marche [Ancona] (Piazza Roma 22, 60121 Ancona Italy)

13:50 - 14:10
The effect of temperature on thermo-elastic plate response: FE and reduced model
DONEVA Simona*, WARMINSKI Jerzy, MANOACH Emil
*Institute of Mechanics, Bulgarian Academy of Sciences (Bulgaria, Sofia, 1040 1 "15 Noemvri" Str. Bulgaria) - Department of Applied Mechanics, Lublin University of Technology (Nadbystrzycka 36, 20-618 Lublin Poland)

14:10 - 14:30
The effect of the fibre orientation on the geometrically non-linear vibrations of tow placed composite plates with real clamped boundaries
RIBEIRO Pedro*, ANTUNES Ana Margarida, AKHAVAN Hamed, DIAS Rodrigues José
*Faculdade de Engenharia da Universidade do Porto (Rua Dr. Roberto Frias, s/n 4200-465 Porto Portugal)

14:30 - 14:50
The Effects of Screen Curvature On The Transient Dynamics Of Automotive Windscreen Wipers
GRAHAM Bradley*, MAVROS Georgios, KNOWLES James
*Loughborough University (Loughborough University, Ashby Road, LE11 3TU UK United Kingdom)

14:50 - 15:10
Using Spectral Submanifolds for Forced Response Prediction in Nonlinear Finite Element Models: Direct and Nonintrusive methods
JAIN Shobhit, **CENEDESE Mattia***, HALLER George
*ETH Zürich (Leonhardstrasse 21, 8092, Zürich Switzerland)

Tuesday, July 19, 2022

13:30 - 15:30

MS-15 Energy Transfer and Harvesting in Nonlinear Systems

Rhone 1

Chair: Baptiste Bergeot

13:30 - 13:50
Nonlinear Dynamics of a Ring-based Vibratory Energy Harvester
ASOKANTHAN Samuel, **GEBREL Ibrahim***, WANG Ligang
*The University of Western Ontario (London, ON N6A 5B9 Canada)

13:50 - 14:10
Non-smooth nonlinearities as restoring forces in a mass-in-mass cell
DA Silveira Zanin Camila*, TURE Savadkoohi Alireza, BAGUET Sébastien, DUFOUR Régis
*Univ Lyon, ENTPE, LTDS UMR CNRS 5513 (3 Rue Maurice Audin, 69518 Vaulx-en-Velin France)

14:10 - 14:30
Noise control via exploiting nonlinear interactions
GOURDON Emmanuel*, TURE Savadkoohi Alireza, LAMARQUE Claude-Henri
*Laboratoire de Tribologie et Dynamique des Systèmes (3, Rue Maurice Audin, 69518 Vaulx en Velin (CEDEX) France)

14:30 - 14:50
On the determination of high energy output operation ranges of a piezoelectric bistable energy harvesting system by parallel computing
GRÄBNER Nils*, LENTZ Lukas, VON Wagner Utz
*Technische Universität Berlin, Chair of Mechatronics and Machine Dynamics (Einsteinufer 5-8, 10587 Berlin Germany)

14:50 - 15:10
Targeted energy transfer between a linear oscillator and a time-dependent nonlinear systems
LABETOULLE Aurélie*, GOURDON Emmanuel, TURE Savadkoohi Alireza
*École Nationale des Travaux Publics de l'État (3, Rue Maurice Audin, 69518 Vaulx en Velin (CEDEX) France)

Tuesday, July 19, 2022

13:30 - 15:30

MS-09 Nonlinear Dynamics in Engineering Systems

Auditorium Lumiere

Chair: Gabor Stepan - Ekaterina Pavlovskaia

13:30 - 13:50
Learning-based Model Matching for Fault Detection and Isolation of Nonlinear Systems
GHANIPOOR Farhad*, MURGUIA Carlos, MOHAJERIN Esfahani Peyman, VAN De Wouw Nathan
*Department of Mechanical Engineering, Eindhoven University of Technology (Eindhoven Netherlands)

13:50 - 14:10
Subcritical Hopf bifurcation in the dynamics of a pressure relief valve
KÁDÁR Fanni*, STEPAN Gabor
*Department of Applied Mechanics, Budapest University of Technology and Economics (1111 Budapest, Műegyetem rkp. 5. Hungary)

14:10 - 14:30
Multi-mode approximation of VIVs in vertical and horizontal flexible risers
KURUSHINA Victoria, **PAVLOVSKAIA Ekaterina***
*University of Aberdeen (Centre for Applied Dynamics Research, University of Aberdeen, King's College, Aberdeen, AB24 3UE, United Kingdom United Kingdom)

14:30 - 14:50
Nonlinear dynamic analysis of a nonlocal nanobeam resting on fractional visco-Pasternak foundation by using the incremental harmonic balance method
NESIC Nikola*, CAJIC Milan, KARLICIC Danilo, JOVIC Srdjan
*University of Priština, Faculty of Technical Sciences (38220 Kosovska Mitrovica, Kneza Milosa 7, Serbia Serbia)

14:50 - 15:10
Nonlinear Vibrations of Long Slender Continua Coupled with Discrete Inertia Elements Moving Vertically in a Tall Structure
KACZMARCZYK Stefan*
*University of Northampton (University Drive Northampton NN1 5PH United Kingdom)

Tuesday, July 19, 2022

16:00 - 18:20

MS-01 Reduced-Order Modeling and System Identification

Saint Clair 3B

Chair: Majdi Gzal

16:00 - 16:20
On reduced-order models for resonant nonlinear dynamics: Galerkin truncation, nonlinear normal mode, and dominant spectrum decomposition
GUO Tieding, **REGA Giuseppe***
*Sapienza University of Rome (Rome 00197 Italy)

16:20 - 16:40
Reduced-order model based on cyclic symmetric properties to tackle nonlinear mistuned cyclic structures
QUAEGEBEUR Samuel*, CHOUVION Benjamin, THOUVEREZ Fabrice, BERTHE Loïc
*Safran Helicopter Engines (Safran Helicopter Engines, 64511 Bordes France) - Laboratoire de Tribologie et Dynamique des Systèmes (36 Avenue Guy de Collongue, 69134 Ecully Cedex France)

16:40 - 17:00
Non-intrusive reduced-order modeling of the drift flux model using a residual recurrent neural network
ABBASI Mohammad Hossein*, IAPICHINO Laura, SCHILDERS Wil, VAN De Wouw Nathan
*Eindhoven University of Technology (Eindhoven Netherlands)

17:00 - 17:20
Reduced-order Modeling from Experimental Data via Spectral Submanifolds
CENEDESE Mattia*, AXÅS Joar, HALLER George
*ETH Zürich (Leonhardstrasse 21, 8092, Zürich Switzerland)

17:20 - 17:40
Stable and Fast Identification of Continuous-Time Lur'e-Type Systems
SHAKIB Mohammad Fahim*, POGROMSKY Alexander, PAVLOV Alexey, WOUW Nathan
*Eindhoven University of Technology [Eindhoven] (Den Dolech 2 5612 AZ Eindhoven Netherlands)

Tuesday, July 19, 2022

16:00 - 18:20

MS-10 Non-Smooth Dynamics

Saint Clair 3A

Chair: Vincent Acary - Remco Leine

16:00 - 16:20
Nonsmooth dynamics of slip and stick with a finite-sized contact area
VARKONYI Peter*, ANTALI Mate
*Budapest University of Technology and Economics (H-1111 Budapest Muegyetem rkp 3 Hungary)

16:20 - 16:40
Nonsmooth Modal Analysis of a Rectangular Plate in Unilateral Contact
URMAN David*, LEGRAND Mathias
*Structural Dynamics and Vibration Laboratory, McGill University (Room 122, McConnell Engineering Building, McGill University, 817 Sherbrooke St West, Montréal QC H3A Canada)

16:40 - 17:00
Numerical Methods for Nonsmooth DAEs
ROCCA Alexandre*, ACARY Vincent, BROGLIATO Bernard
*INRIA Grenoble-Alpes (Inovallée 38334 Montbonnot France)

17:00 - 17:20
Simulation of a Hall Flowmeter Funnel with a novel non-smooth numerical procedure for granular media
PROFIZI Paul, **CHARLES Alexandre***
*Université de Technologie de Troyes (12 rue Marie CurieCS 4206010004 TROYES CEDEX France) - Safran Tech (Rue des Jeunes Bois, Châteaufort, 78114 Magny-les-Hameaux France)

17:20 - 17:40
Tangencies in the phase space of mechanical systems with spatial Coulomb friction
ANTALI Mate*
*Budapest University of Technology and Economics (H-1111 Budapest, Muegyetem rkp. 3. Hungary)

17:40 - 18:00
The hidden bridge between continuous and discontinuous worlds and why period 2 may imply chaos
AVRUTIN Viktor*, JEFFREY Mike
*IST, University of Stuttgart (Pfaffenwaldring 9, 70569 Stuttgart Germany)

18:00 - 18:20
Non-smooth Reduced Interface Models for Co-simulation of Mechanical Systems
RAOOFIAN Ali, **KÖVECSES József***, TEICHMANN Marek
*Department of Mechanical Engineering, McGill University (817 Sherbrooke St. West, Montreal, QC H3A 0C3 Canada)

Tuesday, July 19, 2022

16:00 - 18:00

MS-07 Dynamics and Optimization of Multibody Systems

Saint Clair 2

Chair:Régis Dufour

16:00 - 16:20
[visio] Three-Link Snake Robot with a Single Control Input
DOSAEV Marat*, KLIMINA Liubov, SELYUTSKIY Yury
*Institute of Mechanics, Lomonosov Moscow State University (119192, 1 Michurinskiy pr-t, Moscow, Russia Russia)

16:20 - 16:40
[visio] Feedback Control for a Body Carrying a Chain of Oscillators
OVSEEVICH Alexander*, ANANIEVSKI Igor
*Ishlinsky Institute for Problems in Mechanics RAS (Prospekt Vernadskogo, 101-1, Moscow 119526 Russia)

16:40 - 17:00
[visio] Swing Oscillations Generated by Sitting Human
FORMALSKII Alexander*, KLIMINA Liubov, JENKINS Alejandro
*Institute of Mechanics, Lomonosov Moscow State University (119192 Moscow, Michurinskiy prosp., 1 Russia)

17:00 - 17:20
[visio] Dynamics of Interacting Populations in a Bounded Domain: Control and Estimation under Nonlinearity and Uncertainty
FILIPPOVA Tatiana*
*Krasovskii Institute of Mathematics and Mechanics, UB RAS, Ural Federal University (16 S.Kovalevskaya Str., Ekaterinburg 620990 Russia)

17:20 - 17:40
Controlled motion of two interacting particles on a rough inclined plane
BOLOTNIK Nikolay*, FIGURINA Tatiana, BOGOSLAVSKII Ivan
*institute for Problems in Mechanics [Moscow] (Prospekt Vernadskogo, 101-1, Moscow 119526 Russia Russia)

17:40 - 18:00
Reorientation of a rigid body by means of an auxiliary mass
CHERNOUSKO Felix*
*Institute for Problems in Mechanics [Moscow] (Prospekt Vernadskogo, 101-1, Moscow 119526 Russia Russia)

Tuesday, July 19, 2022

16:00 - 18:20

MS-05 Slow-Fast Systems and Phenomena

Saint Clair 1

Chair: Oleg Gendelman

16:00 - 16:20
Phase resetting as a two-point boundary value problem
KRAUSKOPF Bernd, **LANGFIELD Peter***, OSINGA Hinke M.
*IHU Lyric, INRIA Bordeaux (Pessac-Bordeaux France)

16:20 - 16:40
Resonant nonlinear triad interactions of acoustic–gravity waves
KADRI Usama*
*School of Mathematics, Cardiff University (Abacws, Senghennydd Road, Cathays, Cardiff, Wales, UK, CF24 4AG United Kingdom)

16:40 - 17:00
Multi-scale and multi-pathways: How the ULF waves hoard electrons into precipitation
VAINCHTEIN Dmitri*, ZHANG Xiaojia, ARTEMYEV Anton
*Nyheim Plasma Institute, Drexel University (C. & J. Nyheim Plasma Institute 200 Federal St., Suite 500 Camden, NJ 08103 United States)

17:00 - 17:20
Slow-fast dynamics in vibratory pile driving: field tests and numerical modelling
TSETAS Athanasios*, TSOUVALAS Apostolos, METRIKINE Andrei
*Faculty of Civil Engineering and Geosciences, Delft University of Technology (Stevinweg 1, 2628 CN, Delft Netherlands)

17:20 - 17:40
On the Escape of a Resonantly Excited Couple of Colliding Particles from a Potential Well under Bi-harmonic Excitation
GENDA Attila*, FIDLIN Alexander, GENDELMAN Oleg
*Institute of Engineering Mechanics, Karlsruhe Institute of Technology (Kaiserstraße 10, 76131, Karlsruhe Germany)

Tuesday, July 19, 2022

16:00 - 18:20

MS-08 Nonlinear Phenomena in Mechanical and Structural Systems

Rhone 3B

Chair: Oded Gottlieb

16:00 - 16:20
Coupled Thermoelastic Large Amplitude Vibrations of Bi-Material Beams
MANOACH Emil*, DONEVA Simona, WARMINSKI Jerzy
*Institute of Mechanics, Bulgarian Academy of Sciences (Acad. G. Bonchev Street, block 4 Institute of Mechanics Bulgaria)

16:20 - 16:40
Couplings and nonlinearities modelling in drillstring dynamics
MANIN Lionel, **MAHJOUB Mohamed***, DUFOUR Régis, ANDRIANOELY Marie-Ange, TRAN Quang Thinh, NGUYEN Khac Long, MENAND Stephane
*Helmerich & Payne - DrillScan (26 rue Emile Decorps, Villeurbanne France)

16:40 - 17:00
Escape Dynamics of a Parametrically Excited Particle from an Infinite Range Potential
K R Jayaprakash*, GENDELMAN Oleg
*Indian Institute of Technology Gandhinagar (Palaj, IIT Gandhinagar, Gandhinagar-382355, Gujarat India)

17:00 - 17:20
Explanation of the Locomotion of a Rigid Body along a Vibrating Nonlinear Beam
MÜLLER Florian*, VAKAKIS Alexander, KRACK Malte
*Universität Stuttgart [Stuttgart] (Keplerstraße 7, 70174 Stuttgart Germany)

17:20 - 17:40
Harmonic Balance Method for the stationary response of continuous systems with nonlinear hysteretic damping under harmonic excitation
ZHANG Jiangyi, FĂRĂGĂU Andrei, VAN Der Esch Anton, METRIKINE Andrei, **VAN Dalen Karel***
*Faculty of Civil Engineering and Geosciences, Delft University of Technology (Stevinweg 1, 2628 CN, Delft Netherlands)

17:40 - 18:00
Harmonic balance-based crack size estimation in an ultrasonic fatigue specimen
KISER Shawn*, GUSKOV Mikhail, REBILLAT Marc, RANC Nicolas
*Procédés et Ingénierie en Mécanique et Matériaux [Paris] (151 Boulevard de l'Hôpital, 75013 Paris France)

18:00 - 18:20
Influence of friction damping on frequency lock-in in cyclic structure
BYRTUS Miroslav*, DYK Stepan
*University of West Bohemia [Plzeň] (Univerzitní 2732/8, 306 14 Plzeň 3 Czech Republic)

Tuesday, July 19, 2022

16:00 - 18:20

MS-06 Fractional Derivatives

Rhone 3A

Chair: Pierre Melchior

16:00 - 16:20
A new dynamical attractive and repulsive fractional potential for UAV in 3D dynamical environment
MELCHIOR Pierre*, RUIZ Kendric, VICTOR Stephane, CHAUMETTE Serge
*Université de Bordeaux / Bordeaux INP (IMS - UMR 5218 CNRS Université de Bordeaux 351 cours de la Libération, Bât. A31 33405 TALENCE cedex France)

16:20 - 16:40
Time-domain Wave Propagation in Rigid Porous Media using Equivalent Fluid Model with a Quadratic Nonlinearity.
MOUFID Ilyes*, MATIGNON Denis, RONCEN Rémi, PIOT Estelle
*ONERA / DMPE, Université de Toulouse [Toulouse] (F-31055 Toulouse France)

16:40 - 17:00
Influence of fractional viscoelastic connecting layers on the response of a beam-mass array exposed to motion of supports
PAUNOVIĆ Stepa*, CAJIC Milan, KARLICIC Danilo
*Mathematical Institute of the Serbian Academy of Sciences and Arts, Serbia (Kneza Mihaila 36, Belgrade Serbia)

17:00 - 17:20
Free and forced modes of fractional-type torsional oscillations of complex rod
(STEVANOVIÉ) Hedrih Katica, **HEDRIH Andjelka***
*Mathematical Institute of Serbian Academy of Sciences and Arts (Kneza Mihaila 36, 11 000 Belgrade Serbia)

Tuesday, July 19, 2022

16:00 - 18:20

MS-14 Nonlinear Dynamics for Engineering Design

Rhone 2

Chair: Carlos Mazzilli

16:00 - 16:20
Dissipation Effects in Mechanical Systems
BUDAI Csaba, **KÖVECSES József***, STEPAN Gabor
*Department of Mechanical Engineering and Centre for Intelligent Machines, McGill University (817 Sherbrooke Street West, Montréal (Québec) Canada H3A 0G4 Canada)

16:20 - 16:40
Dynamic stability of tuned vibration absorbers allowing a rotational mobility
MAHE Vincent*, RENAULT Alexandre, GROLET Aurelien, THOMAS Olivier, MAHÉ Hervé
*Valeo Transmissions, Centre d'Étude des Produits Nouveaux (Espace Industriel Nord, Route de Poulainville, 80009 Amiens Cedex 1 France) - Laboratoire d'Ingénierie des Systèmes Physiques et Numériques (Arts et Métiers - Campus d'Aix-en-Provence2, cours des Arts et Métiers, 13617 AIX EN PROVENCETél.: +33 (0)4 42 93 81 41Laboratoire d'Ingénierie des Systèmes Physiques et numériques (LISPEN EA7515)Arts et Métiers - Campus de Lille8 bd Louis XIV - 59046 Lille CedexTél.: +33 (0)4 42 93 81 41Laboratoire d'Ingénierie des Systèmes Physiques et numériques (LISPEN EA7515)Arts et Métiers - Campus de Cluny (Institut Image de Chalon-sur-Saône)2 rue Thomas Dumorey 71100 CHÂLONS-SUR-SAONETél.: +33 (0)3 85 90 98 60 France)

16:40 - 17:00
Analytical Criterion of Multimodal Snap-through Flutter of Thin-walled Panels
PILIPCHUK Valery*
*Wayne State University (5050 Anthony Wayne Dr., 2118 Detroit, Michigan 48202 United States)

17:00 - 17:20
Forced vibration analysis of non-linear Euler-Bernoulli beam using Efficient Path Following Method
MOUSAVI Seyed Mojtaba*, JELVEH Meisam, SADR Mohammad Homayoune, TOHIDI Hadi
*Amirkabir University of Technology (424 Hafez Ave, Tehran, Iran, 15875-4413 Iran)

Tuesday, July 19, 2022

16:00 - 18:20

MS-15 Energy Transfer and Harvesting in Nonlinear Systems

Rhone 1

Chair: Anton Krivtsov - Emmanuel Gourdon

16:00 - 16:20
Passive suppression of axial-flow-induced vibrations of a cantilevered pipe discharging fluid using non-linear vibration absorbers
SCHWENCK Franco Maciel Vitor*, FRANZINI Guilherme, KHEIRI Mojtaba
*Escola Politecnica da Universidade de Sao Paulo [Sao Paulo] (Av. Prof. Luciano Gualberto, 380 - Butantã, São Paulo - SP, 05508-010 Brazil)

16:20 - 16:40
Passive Nonlinear Energy Sink for Pathological Tremor Reduction
GEBAI Sarah*, TURE Savadkoohi Alireza, LAMARQUE Claude-Henri
*École Nationale des Travaux publics de l'État (3 Rue Maurice Audin, 69120 Vaulx-en-Velin France)

16:40 - 17:00
Resonance Capture Cascade in Nonlinear Piezoelectric Shunt
DEKEMELE Kevin*, VAN Torre Patrick, LOCCUFIER Mia
*Ghent University (Technology park 125 Belgium)

17:00 - 17:20
Single mode control of overhead transmission line conductor with a nonlinear absorber
LEROUX Matthieu*, TURE Savadkoohi Alireza, LANGLOIS Sébastien
*École Nationale des Travaux Publics de l'État (3, Rue Maurice Audin, 69518 Vaulx en Velin (CEDEX) France) - Université de Sherbrooke, Faculté de Génie, Département de Génie Civil et de Génie du Bâtiment (Université de Sherbrooke, Québec, J1K 2R1 Canada)

17:20 - 17:40
Theoretical description of thermal transient grating experiment: dynamical and kinetic approaches.
SOKOLOV Aleksei*, BORISENKOV Bogdan, WOLFGANG Müller, KRIVTSOV Anton
*Technische Universität Berlin (Straße des 17. Juni 135 10623 Berlin Germany)

17:40 - 18:00
The Oscillating Frequencies and Energy Harvesting of a Piezoelectric Bimorph with Various Tail Structures in Different Hydraulic Flow Rate
CHEN Huai-Pu*, HUANG Yu-Hsi, LIN Hoang-Yan
*Department of Electrical Engineering, National Taiwan University (No.1, Sec.4, Roosevelt Rd., Taipei Taiwan)

Tuesday, July 19, 2022

16:00 - 18:20

MS-09 Nonlinear Dynamics in Engineering Systems

Auditorium Lumiere

Chair: A. Steindl - S. Kaczmarczyk

16:00 - 16:20
Influence of gear topology discontinuities on the nonlinear dynamic response of a gear train subjected to multiharmonic parametric excitation
MELOT Adrien*, BENAICHA Youness, PERRET-LIAUDET Joël, RIGAUD Emmanuel
*Laboratoire de Tribologie et Dynamique des Systèmes (36 Avenue Guy de Collongue, 69134 Ecully Cedex France)

16:20 - 16:40
Experimental investigation of Circular Cylindrical Shell with non newtonian fluid
ZIPPO Antonio*, PELLICANO Francesco, IARRICCIO Giovanni
*Università degli Studi di Modena e Reggio Emilia, Dipartimento di Ingegneria Enzo Ferrari, Centre InterMech - MO.RE. (Via Pietro Vivarelli 10, 41125 - Modena Italy)

16:40 - 17:00
Reconfigurable Feedback Control of a Flexible Structure with a Nonstationary Backlash via a Digital-Twin Framework
VERED Yoav*, ELLIOTT Stephen
*Institute of Sound and Vibration Research, University of Southampton (University Rd, Highfield, Southampton SO17 1BJ United Kingdom)

17:00 - 17:20
Stochastic Response of Hopf Adaptive Frequency Oscillator
LI Xiaofu, SHOUGAT Md Raf E Ul, FENDLEY Casey, DEAN Robert, **BEAL Aubrey***, PERKINS Edmon
*University of Alabama in Huntsville (301 Sparkman Drive, Huntsville, AL 35899 United States)

Wednesday, July 20, 2022

08:30 - 10:30

MS-22 Special session dedicated to L.I. Manevitch

Saint Clair 1

O. Gendelman, I. Andrianov, Y Mikhlin

08:30 - 08:50
Unified perspectives on nonlinear model reduction
REGA Giuseppe*, GUO Tieding
*Sapienza University of Rome (Rome 00197 Italy)

08:50 - 09:10
A General Bayesian Nonlinear Estimation Method Using Resampled Smooth Particle Hydrodynamics Solutions of the Fokker-Planck Equation
DUFFY Michael, CHUNG Soon-Jo, **BERGMAN Lawrence***
*University of Illinois at Urbana-Champaign (Aerospace Engineering, 104 South Wright St., Urbana, Illinois United States)

09:10 - 09:30
Coupled nonlinear oscillators: closed form solutions
STEFANO Lenci*
*Department of Civil and Building Engineering, and Architecture [Ancona] (via Brecce Bianche, 60131 Ancona Italy)

09:30 - 09:50
Phase - locked breathers in the damped driven granular chains
KOVALEVA Margarita, **STAROSVETSKY Yuli***
*Technion - Israel Institute of Technology [Haifa] (Technion City, Haifa 3200003 Israel)

09:50 - 10:10
Nonlinear Phenomena in Shells with Random Excitation
PELLICANO Francesco*, ZIPPO Antonio, IARRICCIO Giovanni
*Università degli Studi di Modena e Reggio Emilia, Dipartimento di Ingegneria Enzo Ferrari, Centre InterMech - MO.RE. (V. P. Vivarelli 10 41125 Modena ITALY Italy)

10:10 - 10:30
Intermodal targeted energy transfer (IMTET) concept in seismically excited model of twenty-story steel structure
GZAL Majdi, CARRION Juan, AL-SHUDEIFAT Mohammed, SPENCER Bill, VAKAKIS Alexander, BERGMAN Lawrence, **GENDELMAN Oleg***
*Department of Mechanical Engineering [Haifa] (Technion - Institute of Technology Haifa 32000 Israel Israel) - Technion - Israel Institute of Technology, Faculty of Mechanical Engineering, (Technion City, Haifa, 32000 Israel)

Wednesday, July 20, 2022

08:30 - 10:30

MS-16 Random Dynamical Systems - Recent Advances and New Directions

Rhone 2

Chair: Subramanian Ramakrishnan

08:30 - 08:50
[no show] Non-linear dynamic stability of mono-symmetric thin walled beams under random excitation
TAYEBI Sajad*
*Sajad H Tayebi (133,Babataher Avenue,Tehranno,Tehran Iran)

08:50 - 09:10
StochasticDelayDiffEq.jl - An Integrator Interface for Stochastic Delay Differential Equations in Julia
SYKORA Henrik, RACKAUCKAS Christopher, WIDMANN David, **BACHRATHY Daniel***
*MTA-BME Lendület Machine Tool Research Group, Department of Applied Mechanics, Budapest University of Technology and Economics (Budapest, Muegyetem rkp. 3. Hungary)

09:10 - 09:30
The Effects of Measurement Noise on Vehicle Motion Control with Delayed State Feedback
VÖRÖS Illés*, TAKÁCS Dénes
*Budapest University of Technology and Economics (Budapest, Muegyetem rkp. 3, 1111 Hungary)

09:30 - 09:50
The Relevance of Spectral Submanifolds and Slow Manifolds for Randomly Excited Mechanical Systems
BREUNUNG Thomas*, KOGELBAUER Florian, HALLER George
*Eidgenössische Technische Hochschule Zürich (Leonhardstrasse 21 8092 Zürich Switzerland)

09:50 - 10:10
The hysteretic dynamics of a harmonically excited snap-through oscillator in the presence of additive noise excitations
CHAWLA Rohit, **ROUNAK Aasifa***, PAKRASHI Vikram
*Aasifa Rounak (218A, School of Mechanical and Materials Engineering, University College Dublin, Belfield Ireland)

Wednesday, July 20, 2022

08:30 - 10:30

MS-21 Nonlinear Dynamics in Acoustics

Saint Clair 2

Chair: Cyril Touzé

08:30 - 08:50
Passive control of flexural beam vibrations using nonlinear absorbers combined with an Acoustic Black Hole
LI Haiqin, **TOUZÉ Cyril***, PELAT Adrien, GAUTIER François
*Institut des Sciences de la mécanique et Applications industrielles (828 bd des maréchaux 91762 Palaiseau cedex Franceanciennement LAMSID UMR 8193 France)

08:50 - 09:10
Resonant Triads of Acoustic-Gravity Waves in Shallow Water
RICKETTS Evan*, KADRI Usama
*School of Engineering, Cardiff University (Queen's Buildings, 14-17 The Parade, Cardiff CF24 3AA United Kingdom)

09:10 - 09:30
Study of the behaviour of the trombone using bifurcation diagrams
MATTÉOLI Rémi*, GILBERT Joël, MAUGEAIS Sylvain, VERGEZ Christophe, DALMONT Jean-Pierre
*LAUM, Laboratoire d'Acoustique de l'Université du Mans (Avenue Olivier Messiaen, 72085 Le Mans France)

09:30 - 09:50
Fast Explicit Algorithms for Hamiltonian Numerical Integration
BILBAO Stefan*, DUCCESCHI Michele
*Acoustics and Audio Group, University of Edinburgh (Room 2.10, Alison House, 12 Nicolson Sq., Edinburgh, EH8 1DR United Kingdom)

09:50 - 10:10
Real-time simulation of the struck piano string with geometrically exact nonlinearity via a scalar quadratic energy method
DUCCESCHI Michele*, BILBAO Stefan, WEBB Craig
*Dept of Engineering, University of Bologna (Viale Risorgimento 2, 40136, Bologna, Italy Italy)

Wednesday, July 20, 2022

08:30 - 10:30

MS-08 Nonlinear Phenomena in Mechanical and Structural Systems

Rhone 3B

Chair: Jaroslaw Latalski

08:30 - 08:50
Influence of the base motion on the dry-whip onset of an on-board rotor-journal bearing system
BRIEND Yvon*, CHATELET Eric, DUFOUR Régis, ANDRIANOELY Marie-Ange, LEGRAND Franck, BAUDIN Sophie
*Univ Lyon, INSA-Lyon, CNRS UMR5259, LaMCoS, F-69621, France (20 Avenue Albert Einstein France)

08:50 - 09:10
Investigation of bifurcations in a nonlinear rotor system using numerical continuation
AKAY Mehmet*, SHAW Alexander, FRISWELL Michael
*Swansea University (Swansea University Bay Campus Fabian Way Crymlyn Burrows Swansea SA1 8EN Wales, UK United Kingdom)

09:10 - 09:30
Investigation of energy dissipation based on shock and friction to suppress critical self-excited vibrations in drilling systems
KULKE Vincent, OSTERMEYER Georg-Peter, **HOHL Andreas***
*Baker Hughes (Baker-Hughes-Straße 1, 29221 Celle Germany)

09:30 - 09:50
Model order reduction for geometrically nonlinear beams featuring internal resonance and centrifugal effect
MARTIN Adrien*, OPRENI Andrea, VIZZACCARO Alessandra, SALLES Loic, FRANGI Attilio, TOUZÉ Cyril
*Institute of Mechanical Science and Industrial Applications (Unité de Mécanique, IMSIA 828 Boulevard des Maréchaux 91762 Palaiseau Cedex France)

09:50 - 10:10
Modeling and Simulations of the Nonlinear Dynamics of Carbon Nanotube Based Resonator Assuming Nonlocal Strain and Velocity Gradient Theories
OUAKAD Hassen*, SEDIGHI Hamid
*SULTAN QABOOS UNIVERSIY (Al Khoudh, MUSCAT, OMA Oman)

10:10 - 10:30
Modelling and dynamics of smart composite box beam with nonlinear constitutive behaviour of active elements
LATALSKI Jaroslaw*, WARMINSKI Jerzy
*Department of Applied Mechanics, Lublin University of Technology (Nadbystrzycka 36, 20-618 Lublin Poland)

Wednesday, July 20, 2022

08:30 - 10:30

MS-03 Computational Methods

Rhone 3A

Chair: Harry Dankowicz

08:30 - 08:50
Phase resonance of an oscillator with polynomial stiffness
VOLVERT Martin*, KERSCHEN Gaëtan
*Aerospace and Mechanical Engineering Department [Liège] (1, Chemin des Chevreuils Sart Tilman 4000 Liège Belgium)

08:50 - 09:10
Parallel Harmonic Balance Method: towards very large scale systems
SALLES Loic*, BLAHOS Jiri, VIZZACARRO Alessandra, EL Haddad Fadi
*Department of Mechanical Engineering [Imperial College London] (Imperial College London, London SW7 2AZ United Kingdom)

09:10 - 09:30
Tracking basin boundaries with Clustered Simple Cell Mapping method
GYEBRÓSZKI Gergely*, CSERNÁK Gábor
*MTA-BME Research Group on Dynamics of Machines and Vehicles (H-1111, Budapest, Műegyetem rkp 3. Hungary)

09:30 - 09:50
Asymptotic-preserving and hybrid finite-volume/Monte-Carlo methods for kinetic equations in the plasma edge of a fusion reactor
SAMAEY Giovanni*
*KU Leuven, Departement of Computer Science (Celestijnenlaan 200A, 3001 Heverlee Belgium)

Wednesday, July 20, 2022

08:30 - 10:30

MS-18 Control and Synchronization in Nonlinear Systems

Rhone 1

Chair: A. Pavlov, B. Brogliato

08:30 - 08:50
A Hybrid Position Feedback Controlled Bistable Metamaterial Concept
SIMSEK Mehmet, SCHIENI Rick, BURLION Laurent, **BILGEN Onur***
*Rutgers University (Department of Mechanical and Aerospace Engineering 98 Brett Rd Piscataway, NJ 08854 United States)

08:50 - 09:10
Effect of Topology upon Relay Synchronization in Multilayer Neuronal Networks
DRAUSCHKE Fenja*, OMELCHENKO Iryna, SAWICKI Jakub, SCHÖLL Eckehard
*Institut für Theoretische Physik, Technische Universität Berlin (Hardenbergstr. 36, 10623 Berlin Germany)

09:10 - 09:30
Adaptive control for compensation of non-linear hose characteristics in mechanical ventilation
REINDERS Joey*, HUNNEKENS Bram, OOMEN Tom, VAN De Wouw Nathan
*Demcon Advanced Mechatronics (Best Netherlands) - Eindhoven University of Technology [Eindhoven] (Eindhoven Netherlands)

09:30 - 09:50
An Input-Output Approach Towards Synchronization Under Communication Constraints
THOMAS Jijju*, STEUR Erik, HETEL Laurentiu, FITER Christophe, RICHARD Jean-Pierre, VAN De Wouw Nathan
*Department of Mechanical Engineering, Eindhoven University of Technology (Department of Mechanical Engineering, Eindhoven University of Technology, The Netherlands Netherlands) - Ecole Centrale de Lille, CRIStAL UMR CNRS 9189 (Ecole Centrale de Lille/Université de Lille, CRIStAL UMR CNRS 9189, 59650 Villeneuve d'Ascq, France France) - Inria Lille (Inria Lille, Villeneuve d'Ascq, France France)

09:50 - 10:10
Constrained input modulation for impulse-based motion control
RUDERMAN Michael*
*University of Agder (Postboks 422, 4604 Kristiansand Norway)

Wednesday, July 20, 2022

08:30 - 10:30

MS-09 Nonlinear Dynamics in Engineering Systems

Auditorium Lumiere

Chair: Robert Parker - Daniel Johnston

08:30 - 08:50
The FutureForge manipulator and an approximate analytical solution algorithm for its nonlinear dynamics
JOHNSTON Daniel*, CARTMELL Matthew, WYNNE Bradley, PAKRASHI Vikram, KOVACIC Ivana
*University of Strathclyde (16 Richmond St Glasgow G1 1XQ, Glasgow, Scotland United Kingdom)

08:50 - 09:10
Towards a simple calibration of a scour-depth sensor
BELMOKHTAR Mohamed*, SCHMIDT Franziska, CHEVALIER Christophe, TURE Savadkoohi Alireza, LAMARQUE Claude-Henri
*Laboratoire expérimentation et modélisation pour le génie civil et urbain (14-20 Boulevard Newton, 77420 Champs-sur-Marne France)

09:10 - 09:30
Transient deformation of a beam travelling on a moving rough surface
VETYUKOV Yury*, SCHEIDL Jakob
*Technische Universität Wien (Technische Universität Wien (TUW), Institute of Mechanics and Mechatronics, Getreidemarkt 9, 1060 Vienna Austria)

09:30 - 09:50
Influence of Gyroscopic Effects on Nonlinear Dynamics of High-Speed Planetary Gears Having an Elastic Ring
WANG Chenxin, **PARKER Robert***
*University of Utah (201 Presidents Cir, Salt Lake City, UT 84112 United States)

09:50 - 10:10
Prediction of Limit Cycles of Lateral Oscillations in Drilling Processes: Numerical Analysis and Experimental Validation
HEYSER Dennis*, SCHWEIZER Bernhard, VOLZ Marcel, ABELE Eberhard
*Institute of Applied Dynamics (Technische Universität Darmstadt L1|01 Otto-Berndt-Straße 2 D-64287 Darmstadt Germany)

Wednesday, July 20, 2022

08:30 - 10:30

MS-17 Time-periodic systems

Saint Clair 3A

Chair:Thomas Pumhoessel

08:30 - 08:50
A Koopman View on the Harmonic Balance and Hill Method
BAYER Fabia*, LEINE Remco
*Institute for Nonlinear Mechanics, University of Stuttgart (Institut für nichtlineare Mechanik Pfaffenwaldring 9 70569 Stuttgart Germany)

08:50 - 09:10
An extreme time-periodic oscillator
ANZOLEAGA Grandi Alvaro*, PROTIÈRE Suzie, LAZARUS Arnaud
*Institut Jean Le Rond dÁlembert (Boite 162 4 place Jussieu 75005 Paris France)

09:10 - 09:30
Asymptotic description of the wear process in dry-running reciprocating compressors
JURISITS Richard*, KAUFMANN Andreas, KORNFELD Matthias, ANTRETTER Thomas
*University of Applied Sciences Vienna (Vienna Austria)

09:30 - 09:50
Attractor Targeting by Dual-frequency Driving
HEGEDŰS Ferenc, **KRÄHLING Péter***, MARCEL Aron, LAUTERBORN Werner, METTIN Robert, PARLITZ Ulrich
*Budapest University of Technology and Economics, Department of Hydrodynamic Systems (H-1111, Budapest, Műegyetem rkp. 3., D building Hungary)

09:50 - 10:10
[no show] Broadband Stabilization with Combined Anti-Resonances
KRAUS Zacharias*, BARAKAT Ahmed, HAGEDORN Peter
*Dynamics and Vibrations Group, Technical University of Darmstadt (Dolivostraße 15, 64293 Darmstadt Germany)

Wednesday, July 20, 2022

08:30 - 10:30

MS-19 Fluid-Structure Interaction

Saint Clair 3B

Chair: Oded Gottlieb

08:30 - 08:50
Bifurcations of an Optically Excited Achiral Nano-Ellipsoid in a Stationary Fluid
BERGHAUS Tomer*, MILOH Touvia, SEPYAN Gregory, GOTTLIEB Oded
*Tel Aviv University (Tel Aviv Israel)

08:50 - 09:10
VSIV Experimental Analysis of a Catenary Riser Model in the Modal Space
SALLES Rafael, **PESCE Celso***
*Escola Politécnica, University of São Paulo (Av. Prof. Mello Moraes 2231 05508-030 São Paulo, SP Brazil)

09:10 - 09:30
Dynamics and stability of a planar three-link swimmer with passive visco-elastic joint in Ideal fluid
TOVI Elon*, OR Yizhar
*Faculty of Mechanical Engineering, Technion - Israel Institute of Technology (Haifa, Technion City Israel)

09:30 - 09:50
Effect of Piezoelectric Coupling on Dynamical Transitions of a Flexible Beam in Viscous Flow
CHATTERJEE Rajanya*, SHAH Chhote, GUPTA Sayan, SARKAR Sunetra
*Department of Applied Mechanics, Indian Institute of Technology Madras (IIT Madras, Chennai, Tamilnadu, India. Pin-600036 India)

09:50 - 10:10
Cantilevered Extensible Pipes Conveying Fluid: a Consistent Reduced-Order Modeling via the Extended Hamilton's Principle for Nonmaterial Volumes
TOMIN Daniel, ORSINO Renato, **PESCE Celso***
*Escola Politécnica, University of São Paulo (Av. Prof. Mello Moraes 2231 05508-030 São Paulo, SP Brazil)

Thursday, July 21, 2022

08:30 - 10:30

MS-19 Fluid-Structure Interaction

Saint Clair 3B

Chair: Morten Brons

08:30 - 08:50
Freezing of Unsteady NonlinearWaves over an uneven bottom by Phase-Space Manipulation
EELTINK Debbie, BRANGER Hubert, LUNEAU Christopher, ARMAROLI Andrea, BRUNETTI Maura, KASPARIAN Jérôme, **GOMEL Alexis***
*University of Geneva (Bd. Carl Vogt 66, 1205 Geneva Switzerland)

08:50 - 09:10
Experimental Investigation of Flexible Cantilevered Pipes Aspirating Water under VIV
DEFENSOR Filho Wagner, **PESCE Celso***, FRANZINI Guilherme, VERNIZZI Guilherme, MACIEL Vitor, ORSINO Renato
*Celso Pupo Pesce (University of São Paulo Laboratorio de Mecanica Offshore Av. Prof. Lúcio Martins Rodrigues, Tr 4, n. 434 - 05508-020 São Paulo Brazil) - Escola Politécnica, University of São Paulo (Av. Prof. Mello Moraes 2231 05508-030 São Paulo, SP Brazil)

09:10 - 09:30
Flow-induced vibrations of two circular cylinders in tandem in a cross flow
ZHAO Jisheng, THOMPSON Mark, **HOURIGAN Kerry***
*Monash University (Department of Mechanical and Aerospace Engineering, 17 College Walk, Monash University Australia)

09:30 - 09:50
Fluid dynamics effect in large arrays
ANDE Raghu*
*Department of Mechanical Engineering, University of Canterbury (Ilam road, Christchurch, 8041 New Zealand)

09:50 - 10:10
Topology of exotic wakes
BRONS Morten*, NIELSEN Anne Ryelund, MATHARU Puneet, HEIL Matthias
*Technical University of Denmark (Lyngby Denmark)

Thursday, July 21, 2022

08:30 - 10:30

MS-17 Time-periodic systems

Saint Clair 3A

Chair: Fabia Bayer

08:30 - 08:50
Control optimization of digital hydraulic drive for knee exoskeleton
RITURAJ Rituraj*, SCHEIDL Rudolf
*Institute of Machine Design and Hydraulic Drives, Johannes Kepler University Linz (Johannes Kepler University Linz Altenberger Straße 69 4040 Linz, Austria Austria)

08:50 - 09:10
Non-linear Vibrations in a Coiling Process with Periodically Changing Radius
HOLL Helmut*
*Johannes Kepler University (Altenbergerstr. 69 A-4040 Linz Austria)

09:10 - 09:30
Nonlinear kinematics of a moored axisymmetric wave energy converter
GIORGI Giuseppe*, DAVIDSON Josh, HABIB Giuseppe, BRACCO Giovanni, MATTIAZZO Giuliana, KALMÁR-NAGY Tamás
*Politecnico di Torino [Torino] (Politecnico di Torino - Corso Duca degli Abruzzi, 24 10129 Torino Italy)

09:30 - 09:50
On periodic solutions and modal energy transfer of mechanical systems with state-dependent impulsive stiffness excitation
PUMHOESSEL Thomas*
*Johannes Kepler Universität Linz (Altenbergerstrasse 69, 4040-Linz Austria)

Thursday, July 21, 2022

08:30 - 10:30

MS-11 Systems with Time Delay

Saint Clair 2

Chair: Gabor Orosz

08:30 - 08:50
An alternative grinding wheel regenerative mechanism: distributed grit dullness
TOTH Mate*, CURTIS David, SIMS Neil
*The University of Sheffield (Western Bank, Sheffield S10 2TN United Kingdom)

08:50 - 09:10
An MID-based Control of a Vibrating Axisymmetric Membrane Using Piezoelectric Transducers
TLIBA Sami, BOUSSAADA Islam, NICULESCU Silviu-Iulian, **FALCON Ricardo***
*Laboratoire des signaux et systèmes (Plateau de Moulon 3 rue Joliot Curie 91192 GIF SUR YVETTE CEDEX France)

09:10 - 09:30
Analysis of Chatter Mechanisms in Cutting Process
WEREMCZUK Andrzej*, RUSINEK Rafal, WARMINSKI Jerzy
*Department of Applied Mechanics, Lublin University of Technology (Nadbystrzycka 38D, 20-618 Lublin Poland)

09:30 - 09:50
Bifurcation analysis at a degenerate parameter point of a non-collocated force control model
ZHANG Li, WANG Huailei, **STEPAN Gabor***
*Budapest University of Technology and Economics (Budapest Hungary)

09:50 - 10:10
Stabilizability Limits for the Inverted Pendulum with a Multiple-Delay Fractional-Order Controller
BALOGH Tamas*, INSPERGER Tamás
*Budapest University of Technology and Economics (Budapest, Muegyetem rkp. 3. Hungary)

Thursday, July 21, 2022

08:30 - 10:30

MS-02 Asymptotic Methods

Saint Clair 1

Chair: Yu. Starosvetsky

08:30 - 08:50
A Reynolds' Limit Formula for the Shear Stress in Dorodnitzyn's Boundary Layer
VALENCIA Carla*
*Universidad Iberoamericana Ciudad de México (Prolongación Paseo de la Reforma No. 880, Lomas de Santa Fe, C.P. 01219, Ciudad de México Mexico)

08:50 - 09:10
Analysis of discrete breathers in the mass-in-mass chain in the state of acoustic vacuum
STAROSVETSKY Yuli*
*Department of Mechanical Engineering [Haifa] (Technion - Institute of Technology Haifa 32000 Israel Israel)

09:10 - 09:30
Asymptotic analysis of transient behavior of two coupled exciters
YÜZBASIOGLU Tunc*, FIDLIN Alexander
*Institute of Engineering Mechanics, Karlsruhe Institute of Technology (Kaiserstr. 10, 76131 Karlsruhe Germany)

09:30 - 09:50
Asymptotic formulation of bifurcation scenarios to post-buckling nonlinear vibrations in thermomechanically coupled plates
SETTIMI Valeria*, REGA Giuseppe
*Department of Structural and Geotechnical Engineering - Sapienza University of Rome (Via Gramsci, 53 - 00197 Rome, Italy Italy)

09:50 - 10:10
Axisymmetric, nonlinear capillary waves: dimple and jet formation
KAYAL Lohit*, BASAK Saswata, DASGUPTA Ratul
*Indian Institue of Technology Bombay (Powai, Mumbai, Maharashtra-400076 India)

Thursday, July 21, 2022

08:30 - 10:30

MS-08 Nonlinear Phenomena in Mechanical and Structural Systems

Rhone 3B

Chair: Daniele Zulli

08:30 - 08:50
Modelling the nonlinear mechanical characteristics of a slack cable using Bouc-Wen model
ZAMANIAN Najafabadi Shima*, TURE Savadkoohi Alireza, LANGLOIS Sébastien
*University of Sherbrooke (2500, boul. de l'Université, Sherbrooke (Québec) J1K 2R1 Canada)

08:50 - 09:10
Nonlinear Analysis of the Snaking Motion of Towed Vehicles
HORVATH Hanna Zsofia*, TAKÁCS Dénes
*Department of Applied Mechanics, Budapest University of Technology and Ecomincs (3. Műegyetem rkp., Budapest 1111 Hungary)

09:10 - 09:30
Speed effects on vibration and collapse of slender structures under moving loads
VAN Der Heijden Gert*, ZHAO Xingwei
*University College London (Gower Street - London, WC1E 6BT United Kingdom)

09:30 - 09:50
Nonlinear Dynamics of a Shearable-Extensible Beam with an Elastic Longitudinal Support: Analytical Derivation, Numerical Simulation and Experimental Validation
KLODA Lukasz*, LENCI Stefano, WARMINSKI Jerzy
*Polytechnic University of Marche (via Brecce Bianche, 60131 Ancona, Italy Italy) - Department of Applied Mechanics, Lublin University of Technology (Nadbystrzycka 38D, 20-618 Lublin Poland)

09:50 - 10:10
Optimal design of impact based non-linear energy dissipation mechanism in pipeline systems
ALOSCHI Fabrizio*, ANDREOTTI Roberto, BURSI Oreste Salvatore, CERAVOLO Rosario
*IGF - Ingenieurgesellschaft Dr.-Ing.Fischbach mbH (An der Vogelrute 2 D-50374 Erftstadt-Lechenich Germany) - Department of Civil, Environmental and Mechanical Engineering, University of Trento (Via Mesiano 77, 38123, Trento Italy)

10:10 - 10:30
Nonlinear vibrations of nanoplates based double mode model and the nonlocal elasticity theory
MAZUR Olga*, AWREJCEWICZ Jan
*National Technical University "Kharkiv Polytechnic Institute" (Kyrpychova 2, 61002, Kharkiv Ukraine)

Thursday, July 21, 2022

08:30 - 10:30

MS-12 Micro- and Nano-Electro-Mechanical Systems

Rhone 3A

Chair: S. Krylov

08:30 - 08:50
Engineering the Dynamic Range of Si3N4 Nonlinear String Resonators
LI Zichao*, XU Minxing, NORTE Richard, ARAGÓN Alejandro, VAN Keulen Fred, STEENEKEN Peter, ALIJANI Farbod
*Precision and microsystems engineering (Delft, The Netherlands) (Mekelweg 2, 2628 CD, Delft Netherlands)

08:50 - 09:10
Exploiting nonlinearities of mechanically-coupled microbeams for mass sensing: theoretical and experimental investigation
RABENIMANANA Toky, NAJAR Fehmi, WALTER Vincent, **KACEM Najib***, GHOMMEM Mehdi
*Univ. Bourgogne Franche-Comté, FEMTO-ST Institute (France France)

09:10 - 09:30
Frequency Stabilization of MEMS Oscillators Using Internal Resonance
SHOSHANI Oriel*, STRACHAN Scott, LOPEZ Daniel, CZAPLEWSKI David, SHAW Steven
*Ben Gurion University (Beer Sheva Israel)

09:30 - 09:50
Hopf Bifurcation in MEMS - (When) Do Such Exist?
GUTSCHMIDT Stefanie*, LENCI Stefano
*University of Canterbury, Mechanical Engineering Department (Christchurch 8140 New Zealand)

09:50 - 10:10
Internal Resonances in Magnetic Resonance Force Microscopy
GOTTLIEB Oded*, HACKER Evyatar
*Technion - Israel Institute of Technology [Haifa] (Technion City, Haifa 3200003 Israel)

10:10 - 10:30
Leveraging Rotating Frame Dynamics for Low-Power Chaos Generation in Nonlinear M/NEMS Resonators
HOURI Samer*, MINATI Ludovico, ASANO Motoki, YAMAGUCHI Hiroshi
*NTT – Basic Research Laboratories (NTT – Basic Research Laboratories 3-1, Morinosato Wakamiya Atsugi-shi, Kanagawa, Japan Japan)

Thursday, July 21, 2022

08:30 - 10:30

MS-16 Random Dynamical Systems - Recent Advances and New Directions

Rhone 2

Chair: Rachel Kuske

08:30 - 08:50
Controlling the location of discrete breather formation in a nonlinear electrical lattice using random excitation
RAMAKRISHNAN Subramanian*, EDLUND Connor
*University of Dayton (Dayton, OH United States)

08:50 - 09:10
Long Time Trapping of Particles in a Rotating Sinai Billiards System
MITRA Saheli*, SAUGATA Bhattacharyya, PAKRASHI Vikram
*Laboratoire de physique des Solides, Université Paris Sud, Orsay, France (Université Paris Sud, Orsay, France France)

Thursday, July 21, 2022

08:30 - 10:30

MS-18 Control and Synchronization in Nonlinear Systems

Rhone 1

Chair: N. van de Wouw, B. Brogliato

08:30 - 08:50
Feedback control of propagating bubbles in Hele-Shaw channels
FONTANA Joao*, THOMPSON Alice
*The University of Manchester (Manchester M13 9PL United Kingdom)

08:50 - 09:10
Stabilizing reset control for motion systems with Stribeck friction
BEERENS Ruud, BISOFFI Andrea, ZACCARIAN Luca, HEEMELS Maurice, NIJMEIJER Henk, **VAN De Wouw Nathan***
*University of Minnesota (Minneapolis, MN United States) - Eindhoven University of Technology [Eindhoven] (Eindhoven Netherlands)

09:10 - 09:30
Finite time bias removal in multi-agent non-linear systems
VARMA Vineeth Satheeskumar*, MORARESCU Irinel Constantin, SRIKANT Sukumar
*CRAN-CNRS (Nancy France)

09:30 - 09:50
Hybrid formalism for consensus of nonholonomic robots with biased measurements
BORZONE Tommaso, MORARESCU Irinel Constantin, **JUNGERS Marc***, BOC Michael, JANNETEAU Christophe
*Université de Lorraine - CRAN CNRS UMR 7039 (2 Avenue de la Foret de Haye, Vandoeuvre les Nancy France)

09:50 - 10:10
Nonlinear vibration control of smart plates using nonlinear modified positive position feedback approach
CHAMAN Meymandi Saeideh*, SHOOSHTARI Alireza, MAHMOODI S. Nima
*Bu_Ali Sina University, Hamedan, Iran (Mechanical Engineering Department, Engineering Faculty, Bu_Ali Sina Un Ahmadi Roushan Blvd. Iran)

Thursday, July 21, 2022

08:30 - 10:30

MS-09 Nonlinear Dynamics in Engineering Systems

Auditorium Lumiere

Chair: Aubrey Beal - Antonio Zippo

08:30 - 08:50
Strongly Nonlinear Forced Damped Model for the Dynamics of the Valve Spring
GZAL Majdi*, GENDELMAN Oleg
*Technion - Israel Institute of Technology, Faculty of Mechanical Engineering, (Technion City, Haifa, 32000 Israel)

08:50 - 09:10
Tuned Mass System with a Hybrid Hysteresis Model
RATHORE Khogesh K*, BISWAS Saurabh
*Indian Institute of Technology, Jammu, India (IIT Jammu, Jagti 181221 India)

09:10 - 09:30
On the effects of meso-scale friction interface geometry on nonlinear dynamics of large mechanical structures
YUAN Jie*, SALLES Loic, SCHWINGSHACKL Christoph
*University of Strathclyde (16 Richmond St, Glasgow G1 1XQ United Kingdom)

09:30 - 09:50
The Basin Stability of a Bi-Stable Frictional Oscillator
STENDER Merten*, HOFFMANN Norbert, PAPANGELO Antonio
*Hamburg University of Technology (Am Schwarzenberg-Campus 1, 21073 Hamburg Germany)

09:50 - 10:10
Asymmetric oscillations of a shallow spherical cap under a harmonic pressure field: bifurcations and chaos
IARRICCIO Giovanni*, ZIPPO Antonio, PELLICANO Francesco
*InterMech MoRe Centre (Via Pietro Vivarelli 10 - int. 1 - 41125 Modena Italy) - Università degli Studi di Modena e Reggio Emilia, Dipartimento di Ingegneria Enzo Ferrari (V. P. Vivarelli 10 41125 Modena ITALY Italy)

Thursday, July 21, 2022

13:30 - 15:30

MS-17 Time-periodic systems

Saint Clair 3A

Chair: Zoltan Dombovari

13:30 - 13:50
Parameter identification of periodic systems by impulse dynamic subspace description
KISS Adam K.*, BACHRATHY Daniel, DOMBOVARI Zoltan
*MTA-BME Lendület Machine Tool Research Group, Department of Applied Mechanics, Budapest University of Technology and Economics (Budapest, Muegyetem rkp. 3. Hungary)

13:50 - 14:10
Test Rig with Drive Belt: Modelling and Simulation of Parametrically Excited Vibrations
MESSER Markus*, GASS Bernhard
*Technische Hochschule Mittelhessen, Fachbereich Maschinenbau, Mechatronik, Materialtechnologie (Wilhelm-Leuschner-Straße 13 61169 Friedberg Germany)

14:10 - 14:30
Parametric resonance in floating bodies - Comparing monochromatic and polychromatic input waves
DAVIDSON Josh, KARIMOV Mirlan, HABIB Giuseppe, **KALMÁR-NAGY Tamás***
*Department of Fluid Mechanics, Faculty of Mechanical Engineering, Budapest University of Technology and Economics (Bertalan Lajos 4-6, Budapest 1111 Hungary)

14:30 - 14:50
Stability of Stationary Solution of Time Periodic Nonlinear Single DoF Time Delayed System Based on Impulse Response Function
DOMBOVARI Zoltan*
*MTA-BME Lendület Machine Tool Research Group, Department of Applied Mechanics, Budapest University of Technology and Economics (Budapest, Muegyetem rkp. 3. Hungary)

14:50 - 15:10
Resonance analysis for a nonhomogeneous wave equation with a time-dependent coefficient in the Robin boundary condition
WANG Jing*, VAN Horssen Wim
*Delft University of Technology (Mekelweg 4, Delft, 2628 Netherlands) - Beijing Institute of Technology (5 South Zhongguancun Street, Haidian District, Beijing Postcode: 100081 China)

Thursday, July 21, 2022

13:30 - 15:30

MS-11 Systems with Time Delay

Saint Clair 2

Chair: Giuseppe Habib

13:30 - 13:50
Calculation of feedback delay during human balancing on rolling balance board
MOLNÁR Csenge Andrea*, INSPERGER Tamás
*MTA-BME Lendület Human Balancing Research Group (1016 Budapest, Gellérthegy u. 30-32 Hungary) - Department of Applied Mechanics, Budapest University of Technology and Economics (1111 Budapest, Műegyetem rkp. 5. Hungary)

13:50 - 14:10
Conservative solitons and reversibility in time delayed systems
JAVALOYES Julien, **SEIDEL Thomas***, GUREVICH Svetlana
*Westfälische Wilhelms-Universität Münster (Universität Münster Schlossplatz 2 48149 Münster Germany)

14:10 - 14:30
Destabilizing effect of back electromotive force along the cyclic coordinate in case of a digitally controlled Furuta pendulum
VIZI Mate*, STEPAN Gabor
*Department of Applied Mechanics, Budapest University of Technology and Economics (Muegyetem rkp. 5., 1111 Budapest, Hungary Hungary)

14:30 - 14:50
Dynamics of Temporal Localized States in Time-Delayed Optically Injected Kerr Gires-Tournois Interferometers
SEIDEL Thomas, JAVALOYES Julien, **GUREVICH Svetlana***
*Institute for Theoretical Physics, University of Münster (Universität Münster Schlossplatz 2 48149 Münster Germany)

14:50 - 15:10
Entrainment of Self-Organized Synchronized States in Delay-Coupled Oscillators
PROUSALIS Dimitrios*, JÜLICHER Frank, WETZEL Lucas
*Max Planck Institute for the Physics of Complex Systems (Max Planck Institute for the Physics of Complex Systems Nöthnitzer Straße 38 01187 Dresden Germany Germany)

15:10 - 15:30
Human positioning of a planar pendulum
SZAKSZ Bence*, STEPAN Gabor
*Department of Applied Mechanics, Budapest University of Technology and Economics (1111 Budapest, Muegyetem rakpart 5 Hungary)

Thursday, July 21, 2022

13:30 - 15:30

MS-02 Asymptotic Methods

Saint Clair 1

Chair: Roman Starosta

13:30 - 13:50
Small and large amplitude, free oscillations of a pinned spherical interface
DHOTE Yashika*, GOSWAMI Partha, DASGUPTA Ratul
*Indian Institute of Technology Bombay (Powai, Mumbai, Maharashtra-400076 India)

13:50 - 14:10
Forced vibration of spring pendulum with nonlinear springs connected in series
SYPNIEWSKA-KAMINSKA Grażyna*, STAROSTA Roman, AWREJCEWICZ Jan
*Poznań University of Technology, Institute of Applied Mechanics (Jana Pawła II 24, 60-965 Poznań, Poland Poland)

14:10 - 14:30
Stabilisation of Rayleigh-Plateau modes on a liquid cylinder
PATANKAR Sagar*, BASAK Saswata, DASGUPTA Ratul
*Indian Institute of Technology [Bombay] (Powai, Mumbai - 400076, INDIA India)

14:30 - 14:50
On solving one-dimensional wave equations subject to nonclassical and to nonlinear boundary conditions
VAN Horssen Wim*
*Delft University of Technology / Delft Institute of Applied Mathematics (Van Mourik Broekmanweg 6, 2628 XE Delft Netherlands)

Thursday, July 21, 2022

13:30 - 15:30

MS-12 Micro- and Nano-Electro-Mechanical Systems

Rhone 3A

Chair: S. Krylov

13:30 - 13:50
Modeling non-conventional vibrational modes of micro-plates in viscous fluids
LOCH Gesing Andre*, PLATZ Daniel, SCHMID Ulrich
*Institute of Sensor and Actuator Systems - Vienna University of Technology (Gusshausstrasse 27, 1040 Vienna, Austria Austria)

13:50 - 14:10
Modeling of Frequency Locking in a Differential Vibrational Beam Accelerometer
HALEVY Omer, **KRYLOV Slava***
*School of Mechanical Engineering, Faculty of Engineering (Tel Aviv University, Tel Aviv, Israel 69978 Israel)

14:10 - 14:30
Multi-Gas Sensing Design based on Nonlinear Coupled Micromachined Resonators
FANG Zhengliang*, HAJJAJ Amal, THEODOSSIADES Stephanos
*Wolfson School of Mechanical, Electrical and Manufacturing Engineering (Wolfson School of Mechanical, Electrical and Manufacturing Engineering, Loughborough, LE11 3TU, UK United Kingdom)

14:30 - 14:50
Nonlinear dynamics of 2D materials
ALIJANI Farbod*, STEENEKEN Peter G.
*Precision and microsystems engineering (TU Delft, The Netherlands) (Mekelweg 2 2628 CD Delft Netherlands)

14:50 - 15:10
Resonance frequency measurement of stress-engineered nanomechanical resonator and its lower limit of frequency uncertainty
WANG Mingkang, ZHANG Rui, ILIC Robert, LIU Yuxiang, **VLADIMIR Aksyuk***
*National Institute of Standards and Technology [Gaithersburg] (100 Bureau Drive, Stop 1070, Gaithersburg, MD 20899-1070 United States)

15:10 - 15:30
Period Tripling States and Non-Monotonic Energy Dissipation in MEMS with Internal Resonance
WANG Mingkang, PEREZ-MOLERO Diego, LOPEZ Daniel, **AKSYUK Vladimir***
*National Institute of Standards and Technology [Gaithersburg] (100 Bureau Drive, Stop 1070, Gaithersburg, MD 20899-1070 United States)

Thursday, July 21, 2022

13:30 - 15:30

MS-18 Control and Synchronization in Nonlinear Systems

Rhone 1

Chair: N. Van de Wouw, B. Brogliato

13:30 - 13:50
Online Control-Based Continuation of Nonlinear Structures Using Adaptive Filtering
ABELOOS Gaëtan*, RENSON Ludovic, COLLETTE Christophe, KERSCHEN Gaëtan
*Aerospace and Mechanical Engineering Department [Liège] (1, Chemin des Chevreuils Sart Tilman 4000 Liège Belgium)

13:50 - 14:10
Optimal Control of Spin Coating on a Spherical Substrate
SHEPHERD Ross*, BOUJO Edouard, SELLIER Mathieu
*University of Canterbury (20 Kirkwood Avenue, Upper Riccarton, Christchurch 8041 New Zealand)

14:10 - 14:30
Non-smooth inverted pendulum swing-up control optimization using a novel, Fourier series based numerical method
BALCERZAK Marek*, ZARYCHTA Sandra, DENYSENKO Volodymyr, STEFANSKI Andrzej
*Lodz University of Technology (1/15 Stefanowskiego Street, 90-924 Lodz Poland)

14:30 - 14:50
PID-based learning control for frictional motion systems
HAZELEGER Leroy, BEERENS Ruud, **VAN De Wouw Nathan***
*University of Minnesota, Department of Civil, Environmental and Geo-Engineering (Minneapolis MN 55455 United States) - Technische Universiteit Eindhoven, Department of Mechanical Engineering (P.O box 513 5600 MB Eindhoven Netherlands)

14:50 - 15:10
Simulation of an OWMS PLL network for clock signal distribution using parallel computing
BUENO Atila*, MACIEL Elvio, BATISTA Matheus, PANZO Eduardo, DERMENDJIAN Fabio, BATISTELA Cristiane, PIQUEIRA José, BALTHAZAR José
*Instituto de Ciência e Tecnologia - Universidade Estadual Paulista (Av. Três de março, 511, Sorocaba - SP Brazil)

Thursday, July 21, 2022

13:30 - 15:30

MS-14 Nonlinear Dynamics for Engineering Design

Rhone 2

Chair: Pedro Ribeiro

13:30 - 13:50
Nonlinear oscillations of a beam-like model of pipe with deformable cross-sections
CASALOTTI Arnaldo, **ZULLI Daniele***, LUONGO Angelo
*University of L'Aquila (Piazzale Ernesto Pontieri 1, 67100 Loc. Monteluco, L'Aquila Italy)

13:50 - 14:10
Analysis of parametric instabilities of two-oscillator bi-linear model through the resonant order reduction in the vicinity of similar nonlinear normal modes
KUMAR Anish, **STAROSVETSKY Yuli***
*Technion - Israel Institute of Technology (Department of Mechanical Engineering, Technion-IIT, Haifa, Israel Israel)

14:10 - 14:30
On the Nonreciprocal Dynamics of Bilinearly Coupled Oscillators
KOGANI Ali, ZOKA Hooman, **YOUSEFZADEH Behrooz***
*Concordia University (1455 De Maisonneuve Blvd. W., EV 4.139 Montreal, QC, H3G 1M8 Canada)

14:30 - 14:50
Parametric excitation of an asynchronous Ziegler's column with a piezoelectric element
MAZZILLI Carlos*, FRANZINI Guilherme
*Escola Politécnica, University of São Paulo (Av. Prof. Almeida Prado 83 CEP 05508-900 São Paulo Brazil)

Thursday, July 21, 2022

13:30 - 15:30

MS-09 Nonlinear Dynamics in Engineering Systems

Auditorium Lumiere

Chair: Francesco Pellicano - Giovani Iarricio

13:30 - 13:50
A machine learning perspective on frictional contacts and self-excited vibrations.
THEVENOT Mael*, STENDER Merten, BRUNEL Jean-François, GEIER Charlotte, DUFRÉNOY Philippe, HOFFMANN Norbert
*Univ. Lille, CNRS, Centrale Lille, UMR 9013 - LaMcube - Laboratoire de Mécanique Multiphysique Multiéchelle, F-59000, Lille, France (Bâtiment ESPRIT, avenue Paul Langevin 59650 Villeneuve-d'Ascq France)

13:50 - 14:10
[visio] Free vibration analysis of functionally graded plates with crack or slit by the R-functions method
SHMATKO Tetyana, AWREJCEWICZ Jan, **KURPA Lidiya***, SHMATKO Aleksandr
*National Technical University "Kharkiv Polytechnic Institute" (Kyrpychov Str., 2, Kharkiv, Ukraine, 61002 Ukraine)

14:10 - 14:30
Methods for decreasing order and dimension in mechanics of solids
KRYSKO-JR. Vadim*, AWREJCEWICZ Jan
*Łódź University of Technology (116 Żeromskiego Street90-924 Lodz Poland)

14:30 - 14:50
[visio] Nonlinear vibrations of sandwich shells with additive manufactured flexible honeycomb core interacting with supersonic gas flow
AVRAMOV Konstantin*, USPENSKY B
*Podgorny Institute for Mechanical Engineering (61046, Kharkiv, 2/10 Dm. Pozharskoho St. Ukraine)

14:50 - 15:10
[visio] Self-sustained Vibrations and Dynamic Instability of Functionally Graded Carbon Nanotubes Reinforced Composite Shells
AVRAMOV Konstantin*, CHERNOBRYVKO Marina, USPENSKY Boris
*Podgorny Institute for Mechanical Engineering (61046, Kharkiv, 2/10 Dm. Pozharskoho St. Ukraine)

15:10 - 15:30
[visio] Resonance Steady State and Transient in the Non-Ideal System having the Pendulum Absorber
MIKHLIN Yuri*, LEBEDENKO Yana
*National Technical University Kharkiv Polytechnic Institute (NTU "KhPI" 2, Kyrpychova str., 61002, Kharkiv, Ukraine Ukraine) - Yuri V. Mikhlin (Dept. of Applied Mathematics National Technical University "KhPI"2 Kyrpychev str. Kharkov 61002 Ukraine Ukraine)

Thursday, July 21, 2022

13:30 - 15:30

MS-08 Nonlinear Phenomena in Mechanical and Structural Systems

Rhone 3B

Chair: Emil Manoach

13:30 - 13:50
The effect of additional masses on the dynamic buckling of a like-beam structure
ALAOUI-TAHIRI Amine*
*Institut des Sciences de la mécanique et Applications industrielles (828 bd des maréchaux 91762 Palaiseau cedex Franceanciennement LAMSID UMR 8193 France)

13:50 - 14:10
The Bifurcation Structure of a Self-Excited Inertia Wheel Double Pendulum
LEVI Yuval*, GOTTLIEB Oded
*Technion - Israel Institute of Technology [Haifa] (Israel)

14:10 - 14:30
Switching from primary to subharmonic resonances in nonlinear systems
RAZE Ghislain*, HOURI Samer, KERSCHEN Gaëtan
*Aerospace and Mechanical Engineering Department, University of Liège (Quartier Polytech 1 (B52/3) Allée de la Découverte 9 Liege, B-4000, Belgium Belgium)

14:30 - 14:50
[visio] Nonlinear Normal Modes in the pendulum system under magnetic excitation
MIKHLIN Yuri, **SURHANOVA Yuliia***
*Dept. od Applied Mathematics, National Technical University "KhPI" (2 Kyrpychov str., Kharkiv 61002 Ukraine Ukraine)

14:50 - 15:10
[visio] Nonlinear Dynamics of a Body with Two Elastic Supports on an Inclined Rough Plane
DOSAEV Marat*, SAMSONOV Vitaly
*Institute of Mechanics, Lomonosov Moscow State University (119192, 1 Michurinskiy pr-t, Moscow, Russia Russia)

15:10 - 15:30
The Role of Dynamics in Face sheet/Core Interface Debonding of Sandwich Panels
BURLAYENKO Vyacheslav*, DIMITROVA Svetlana
*National Technical University 'Kharkiv Polytechnic Institute' (2 Kyrpychova Str., 61002, Kharkiv Ukraine)

Thursday, July 21, 2022

13:30 - 15:30

MS-19 Fluid-Structure Interaction

Saint Clair 3B

Chair: Andrei Metrikine

13:30 - 13:50
Linear stability analysis of fluid-structure interactions with an Immersed-Boundary method
TIRRI Antonia*, NITTI Alessandro, SIERRA Ausin Javier, DE Tullio Marco Donato, GIANNETTI Flavio
*Politecnico di Bari (Via Edoardo Orabona, 4, 70126 Bari BA, Italy Italy)

13:50 - 14:10
Membrane flutter induced by radiation of surface gravity waves on a uniform flow
KIRILLOV Oleg, **LABARBE Joris***
*Northumbria University (Northumbria University Mathematics, Physics and Electrical Engineering Ellison Building, D219 Newcastle upon Tyne NE1 8ST United Kingdom)

14:10 - 14:30
Passive fluidic control of flow around a circular cylinder
RAMSAY James, **SELLIER Mathieu***, HO Wei Hua
*University of Canterbury (University of Canterbury Private Bag 4800, Christchurch 8140 New Zealand)

14:30 - 14:50
Stability transitions of flexible nano-swimmer under rotating magnetic field
CHAPNIK Zvi*, HARDUF Yuval, WU Jiaen, JANG Bumjin, NELSON Bradley, PANÉ Salvador, OR Yizhar
*Department of Mechanical Engineering, Technion - Institute of Technology Haifa 32000 Israel (Technion - Institute of Technology Haifa 32000 Israel Israel)

14:50 - 15:10
Stochastic resonance in a parametrically perturbed aeroelastic system.
H. S. Varun*, ASWATHY M. S., SARKAR Sunetra
*Indian Institute of Technology [Madras] (Chennai 600036 India)

Thursday, July 21, 2022

16:00 - 18:00

Poster Session

Foyer Lumiere

???

16:00 - 18:00
Influence of friction damping on frequency lock-in in cyclic structure
BYRTUS Miroslav*, DYK Stepan
*University of West Bohemia [Plzeň] (Univerzitní 2732/8, 306 14 Plzeň 3 Czech Republic)

16:00 - 18:00
Computation of Damped Nonlinear Normal Modes Using Force Appropriation Technique and Efficient Path Following Method
JELVEH Meisam, **SADR Mohammad Homayoune***, MUSAVI Seyyed Mojtaba
*Amirkabir University of Technology (424 Hafez Ave, Tehran, Iran, 15875-4413 Iran)

16:00 - 18:00
Bifurcations and stability transitions in nonlinear dynamics of a planar undulating magnetic microswimmer
PAUL Jithu*, OR Yizhar, GENDELMAN Oleg
*Technion - Israel Institute of Technology [Haifa] (Haifa Israel)

16:00 - 18:00
Stability of Nonlinear Normal Modes under Stochastic Excitation
MIKHLIN Yuri*, RUDNYEVA Gayane
*National Technical University Kharkiv Polytechnic Institute (NTU "KhPI" 2, Kyrpychova str., 61002, Kharkiv, Ukraine Ukraine)

16:00 - 18:00
SIR model for rumor propagation
PIQUEIRA José, **BATISTELA Cristiane***, MEDINA Cabrera Manuel, GODOI Antonio
*Escola Politecnica da Universidade de Sao Paulo [Sao Paulo] (Av. Prof. Luciano Gualberto, 380 - Butantã, São Paulo - SP, 05508-010 Brazil)

16:00 - 18:00
Dynamics and minimalistic control of a flexible structure containing bi-stable elements
GERON Yamit*, GIVLI Sefi, OR Yizhar
*Technion - Israel Institute of Technology [Haifa] (Haifa Israel)

16:00 - 18:00
Optomechanical cavities: from synchronization to mode locking
BUKS Eyal*
*Technion (Haifa, Israel Israel)

16:00 - 18:00
Analytical study of interfacial three dimensional gravity waves in presence of current
SALMI Soraya*, ALLALOU Nabil
*Université M'Hamed Bougara de Boumerdes (Département de physique, Faculté des sciences, Route de la gare Ferroviaire, Boumerdes 35000 Algeria)

16:00 - 18:00
Control-Oriented Modeling of a Planar Cable-Driven Parallel Robot with Non-Straight Cables
SAADAOUI Rima*, PICCIN Olivier, OMRAN Hassan, BARA Iuliana, LAROCHE Edouard
*Université de Strasbourg (4 Rue Blaise Pascal, 67081 Strasbourg France)

16:00 - 18:00
Experimental verification of the crossover between the time-fractional and standard diffusion in a hierarchical porous material
ZHOKH Alexey*, STRIZHAK Peter
*L.V. Pisarzhevskii Institute of Physical Chemistry of National Academy of Sciences of Ukraine (Nauki Avenue, 31, Kiev 03028 Ukraine)

16:00 - 18:00
Investigation of vibro-impact dynamics in PILine® ultrasonic motors
KAPELKE Simon*, HARTENBACH Felix, SEEMANN Wolfgang
*Physik Instrumente (PI) GmbH & Co. KG (Auf der Roemerstrasse 1 76228 Karlsruhe Germany)

16:00 - 18:00
Model order reduction approach for problems with moving discontinuities
BANSAL Harshit*, RAVE Stephan, IAPICHINO Laura, SCHILDERS Wil, WOUW Nathan
*Eindhoven University of Technology (5612 AZ Eindhoven Netherlands)

16:00 - 18:00
Numerical investigation on storage tank buckling near the liquid level under seismic loading
COLLIGNON Christophe*
*FRAMATOME (10, Rue Juliette Récamier, 69006 Lyon France)

16:00 - 18:00
Nonlinear Dynamics of a Ring-Type MEMS Gyroscope
ASOKANTHAN Samuel, **GEBREL Ibrahim***, WANG Ligang
*The University of Western Ontario (London, ON N6A 5B9 Canada)

16:00 - 18:00
On the solution of the Mathieu equation with multiple harmonic stiffness, parametric amplification for constant and harmonic forcing
ABBOUD Eddy*, THOMAS Olivier, GROLET Aurelien, MAHÉ Hervé
*Valeo Transmissions, Centre d'Étude des Produits Nouveaux (Espace Industriel Nord, Route de Poulainville, 80009 Amiens Cedex 1 France) - Laboratoire d'Ingénierie des Systèmes Physiques et Numériques (Arts et Metiers Institute of Technology, LISPEN, HESAM Université, F-59000 Lille, France France)

16:00 - 18:00
Optimization Process for Ride Quality of a Nonlinear Suspension Model Based on Newton-Euler's Augmented Formulation
BELHORMA Mohamed*, BOUCHIKHI Aboubakar
*University of Sidi Bel Abbes (BP 89, Cite Ben M'hidi, University of Sidi Bel Abbes, Sidi Bel Abbes 22000, Algeria Algeria)

16:00 - 18:00
Passive suppression of parametric excitation of cables using a nonlinear vibration absorber
KOLB Pauline*
*Department Civil Engineering (Technische Universitat D-64277 Darmstadt Germany) - Universidade de São Paulo (Cidade Universitaria - 05508-090 São Paulo Brazil)

16:00 - 18:00
TWMS synchronization network simulation with parallel computing
BATISTA Matheus*, BUENO Atila, BATISTELA Cristiane, MACIEL Elvio, PANZO Eduardo, DERMENDJIAN Fabio, BALTHAZAR José, PIQUEIRA José
*Instituto de Ciência e Tecnologia - Universidade Estadual Paulista (Av. Três de março, 511, Sorocaba - SP Brazil)

16:00 - 18:00
Stability Analysis of Rotary Drilling Systems Associated with Multiple State-Dependent Delays
ZHANG He*, DETOURNAY Emmanuel
*University of Minnesota (500 Pillsbury Dr. S.E., Minneapolis, MN, 55455 United States)

16:00 - 18:00
Two-stroke single-cylinder engine with elastic hinges with preset force characteristics
ZOTOV Alexey*, SVIRIDOV Alexey, TOKAREV Artem
*Ufa State Petroleum Technological University (Kosmonavtov Street 1, Ufa, The Republic of Bashkortostan, Russian Federation, 450062 Russia)

16:00 - 18:00

When friction and vibro-impact make music: physical model of the tromba marina

ABLITZER Frédéric*, GILBERT Joël, GAUTIER François

*Laboratoire d'Acoustique de l'Université du Mans, CNRS UMR 6613, Le Mans, France (Avenue Olivier Messiaen 72085 LE MANS CEDEX 9 France)

Friday, July 22, 2022

08:30 - 10:30

MS-11 Systems with Time Delay

Saint Clair 2

Chair: Gabor Stepan

08:30 - 08:50
Parametric study of a switching control model of stick balancing
NAGY Dalma J.*, BENCSIK László, INSPERGER Tamás
*MTA-BME Lendület Human Balancing Research Group, Budapest University of Technology and Economics (1111 Budapest, Muegyetem rkp. 5. Hungary) - Department of Applied Mechanics, Budapest University of Technology and Economics (1111 Budapest, Muegyetem rkp. 5. Hungary)

08:50 - 09:10
Bistability in nonlinear elastic robotic arms subject to delayed feedback control
HABIB Giuseppe, BARRIOS Asier, **BARTFAI Andras***, DOMBOVARI Zoltan
*MTA-BME Lendület Machine Tool Research Group, Department of Applied Mechanics, Budapest University of Technology and Economics (Budapest, Muegyetem rkp. 3. Hungary)

09:10 - 09:30
Multifrequency dynamics in an excitable microlaser with delayed optical feedback
TERRIEN Soizic*, KRAUSKOPF Bernd, BRODERICK Neil G. R., BARBAY Sylvain
*Department of Mathematics, The University of Auckland (38 Princes Street, Auckland CBD, Auckland 1010 New Zealand) - Dodd-Walls Centre for Photonic and Quantum Technologies (Dodd-Walls Centre University of Otago PO Box 56 Dunedin 9056 New Zealand New Zealand)

09:30 - 09:50
Multiplicity-induced-dominancy for some retarded differential equations
BENARAB Amina*, MAZANTI Guilherme, BOUSSAADA Islam, NICULESCU Silviu-Iulian
*Laboratoire des Signaux et Systèmes (91190, Gif-sur-Yvette France)

09:50 - 10:10
Playing dominoes with lasers: Excitability and pulsed solutions of the Yamada model for a semiconductor laser with saturable absorber and delayed optical feedback
RUSCHEL Stefan*, KRAUSKOPF Bernd, BRODERICK Neil G. R.
*Department of Mathematics [Auckland] (The University of Auckland Private Bag 92019 Auckland 1142 New Zealand)

10:10 - 10:30
Ploughing-limited post-critical dynamics under chatter in turning. Harmonic balance based investigation
GUSKOV Mikhail*
*Procédés et Ingénierie en Mécanique et Matériaux [Paris] (151 Boulevard de l'Hôpital, 75013 Paris France)

Friday, July 22, 2022

08:30 - 10:30

MS-09 Nonlinear Dynamics in Engineering Systems

Auditorium Lumiere

Chair: Yuri Mikhlin - Konstantin Avramov

Friday, July 22, 2022

08:30 - 10:30

MS-18 Control and Synchronization in Nonlinear Systems

Rhone 1

Chair: A. Pavlov, B. Brogliato

08:30 - 08:50
Suppression of synchronous spiking in two interacting populations of excitatory and inhibitory quadratic integrate-and-fire neurons
PYRAGAS Kestutis*, FEDARAVIČIUS Augustinas, PYRAGIENĖ Tatjana
*Center for Physical Sciences and Technology (Savanorių pr. 231, LT-02300 Vilnius Lithuania)

08:50 - 09:10
Synchronization of a Sef-Excited Inertia Wheel Pendula Array
YAKIR Gilad*, GOTTLIEB Oded
*Technion - Israel Institute of Technology (Mechanical Engineering, Technion City, Haifa 320003 Israel)

09:10 - 09:30
Synchronization of networks of dynamical systems by nonlinear integral couplings and sequential decoloring of the network graph
PAVLOV Alexey*, STEUR Erik, VAN De Wouw Nathan
*Norwegian University of Science and Technology [Trondheim] (NO-7491 Trondheim Norway)

09:30 - 09:50
Vibration control of underactuated 3-DOF systems inspired by tuned vibration absorbers: the non-linear Euler-Lagrange controller
JUCHEM Jasper*, LOCCUFIER Mia
*Ghent University (Technologiepark 125, 9052 Zwijnaarde Belgium)

Friday, July 22, 2022

08:30 - 10:30

MS-14 Nonlinear Dynamics for Engineering Design

Rhone 2

Chair: Jerzy Warminski

08:30 - 08:50
Estimating the fractality of a basins of attraction using basin entropy method and sample based approach.
LESZCZYNSKI Maciej*
*Lodz University of Technology (Politechnika Łódzka Wydział Mechaniczny Katedra Dynamiki Maszyn 90-537 Łódź, ul. Stefanowskiego 1/15 Poland)

08:50 - 09:10
Dynamics and Control of a Rotating Beam with Active Element
WARMINSKI Jerzy*, MITURA Andrzej, KLODA Lukasz
*Department of Applied Mechanics, Lublin University of Technology (Nadbystrzycka 38D, 20-618 Lublin Poland)

09:10 - 09:30
Utilizing Noise to Manipulate Energy Localization in a Circular Oscillator Array
ACAR Gizem, ALOFI Abdulrahman, BALACHANDRAN Balakumar, **BREUNUNG Thomas***
*Eidgenössische Technische Hochschule Zürich (Switzerland)

09:30 - 09:50
Evaluating the Resistant Force of a Vibro-Impact Self-Propelled Capsule Moving in the Small Intestine
LIU Yang*, TIAN Jiyuan, YAN Yao, GUO Bingyong
*University of Exeter (North Park Road, Exeter United Kingdom)

09:50 - 10:10
Work-loop techniques for optimising nonlinear forced oscillators
PONS Arion*, BEATUS Tsevi
*Hebrew University of Jerusalem (Giv'at Ram, Jerusalem Israel)

10:10 - 10:30
A novel lubricated friction model for describing underdamped free responses of a spring ? sliding mass oscillator
PERRET-LIAUDET Joel*, MAJDOUB Fida
*Laboratoire de Tribologie et Dynamique des Systèmes (Ecole Centrale de Lyon. 36 avenue Guy de Collongue. 69134 ECULLY cedex France)

Friday, July 22, 2022

08:30 - 10:30

MS-12 Micro- and Nano-Electro-Mechanical Systems

Rhone 3A

Chair: S. Krylov

08:30 - 08:50
Nonlinear damping in graphene resonators undergoing internal resonance
KEŞKEKLER Ata*, SHOSHANI Oriel, STEENEKEN Peter, ALIJANI Farbod
*TU Delft (Department of Precision and Microsystems Engineering, Delft University of Technology, Mekelweg 2, 2628 CD, Delft Netherlands)

08:50 - 09:10
Parametric resonance of a shallow arch microbeam for sensing applications
OUAKAD Hassen*, NAJAR Fehmi
*SULTAN QABOOS UNIVERSIY (Al Khoudh, MUSCAT, OMA Oman)

09:10 - 09:30
Nonlinear Damping in MEMS Bridge Resonators
FAROKHI Hamed*, ROCHA Rodrigo, HAJJAJ Amal, YOUNIS Mohammad
*University of Northumbria at Newcastle (Newcastle City Campus, 2 Ellison Pl, Newcastle upon Tyne NE1 8ST, United Kingdom United Kingdom)

09:30 - 09:50
Drag Forces in Non-Uniform Cantilever Beam Oscillating in Viscous fluid
DEVSOTH Lalsingh*, PANDEY Ashok
*Indian Institute of Technology [Hyderabad] (Indian Institute of Technology HyderabadKandi, Sangareddy - 502285Telangana India)

09:50 - 10:10
Data driven identification of tip-sample interaction in atomic force microscopy
CHANDRASHEKAR Abhilash, **BELARDINELLI Pierpaolo***, BESSA Miguel, STAUFER Urs, ALIJANI Farbod
*DICEA, Polytechnic University of Marche (DICEA, Polytechnic University of Marche, Italy)

Friday, July 22, 2022

08:30 - 10:30

MS-08 Nonlinear Phenomena in Mechanical and Structural Systems

Rhone 3B

Chair: Stefano Lenci

Friday, July 22, 2022

08:30 - 10:30

MS-02 Asymptotic Methods

Saint Clair 1

Chair: Wei Lin - C.H. Lamarque

08:50 - 09:10
[visio] Asymptotic solutions of singular perturbed system of transport equations with small mutual diffusion in the case of many spatial variables
NESTEROV Andrey*
*Russian University of Economics. G. V. Plekhanov (36 Stremyanny pereulok, Moscow, 117997, Russian Federation Russia)

09:10 - 09:30
[visio] Dynamic of the wind powered walking vehicle
GARBUZ Mikhail*, KLIMINA Liubov, SAMSONOV Vitaly
*Institute of Mechanics, Lomonosov Moscow State University (119192 Moscow, Michurinskiy prosp., 1 Russia)

09:30 - 09:50
[visio] Methods of perturbation theory and their applications in nonlinear fracture mechanics and continuum damage mechanics
STEPANOVA Larisa*
*Samara University (Moskovskoe shosse, 34, Samara 443086 Russia)

09:50 - 10:10
[visio] Energy model of free vibrations and resonance in elastic bodies
ALYUSHIN Yuriy*
*National University of Science and Technology MISIS (Leninskiy Prospekt 4, NUST MISIS, Moscow, RU, Moscow Russia Russia)

10:10 - 10:30
Non-stationary dynamics of the sine-lattice consisting of three pendulums (trimer)
KOVALEVA Margarita*, MANEVITCH Leonid
*Federal Research Center for Chemical Physics, Russia Academy of Sciences (119991, 4 Kosygin street, Moscow Russia)

Friday, July 22, 2022

08:30 - 10:30

MS-17 Time-periodic systems

Saint Clair 3A

Chair: Daniel Bachrathy

08:30 - 08:50
Period approximation for nonlinear oscillators with Carleman linearization
HUBAY Csanád Árpád*, KALMÁR-NAGY Tamás
*Budapest University of Technology and Economics, Department of Fluid Mechanics [Budapest] (Bertalan Lajos Street 4-6, 1111 - Budapest Hungary)

08:50 - 09:10
Time integration based stability calculation for delayed periodic system with linear time complexity
BACHRATHY Daniel*, KRISTOF Nagy
*MTA-BME Lendület Machine Tool Research Group, Department of Applied Mechanics, Budapest University of Technology and Economics (Budapest, Muegyetem rkp. 3. Hungary)

09:10 - 09:30
Uni-directional wave propagation in time-modulated inerter-based lattice
KARLICIC Danilo*, CAJIC Milan, PAUNOVIC Stepa, ADHIKARI Sondipon
*Mathematical institute of the Serbian Academy of Sciences and Arts, Belgrade, Serbia (Kneza Mihaila 36, Belgrade Serbia)

09:30 - 09:50
Energy flow characteristics of periodical orbits of nonlinear dynamical systems
XING Jing Tang*
*University of Southampton (Maritime, FEPS, Boldrewood Campus, University of Southampton, Burgess Road, Southampton SO16 7QF United Kingdom)

09:50 - 10:10
New simple oscillator model describing ice-induced vibrations of an offshore structure
ABRAMIAN Andrei*, VAKULENKO Sergei
*Institute for Problems in Mechanical Engineering RAS (V.O., Bolshoj pr., 61 St. Petersburg, 199178 Russia Russia)

Friday, July 22, 2022

08:30 - 10:30

MS-19 Fluid-Structure Interaction

Saint Clair 3B

Chair: Vasily Vedeneev - Andrei Metrikine

08:50 - 09:10
[no show] Vibrations of a vertical flexible riser in sheared flow
KURUSHINA Victoria*, PAVLOVSKAIA Ekaterina
*Newcastle University [Newcastle] (Newcastle upon Tyne NE1 7RU United Kingdom) - Industrial University of Tyumen (38 Volodarskogo Street, Tyumen, 625000 Russia)

09:30 - 09:50
Stochastic Dynamics of Inclined Risers Induced by Pulsating Internal Fluid Flow
ALFOSAIL Feras*, CUNHA Americo, YOUNIS Mohammad
*King Abdullah University of Science and Technology (King Abdullah University of Science and Technology P.O.Box 55455 Jeddah 21534, Saudi Arabia Saudi Arabia) - Saudi Aramco (P.O. Box 5000 Dhahran 31311 Saudi Arabia)

09:50 - 10:10
Solitary wave-like solutions in hyperelastic tubes conveying inviscid and viscous fluid
VEDENEEV Vasily*
*Lomonosov Moscow State University (GSP-1, Leninskie Gory, Moscow, 119991, Russian Federation Russia)

List of authors