



NNM 2021



Program

Monday 5 July, 2021

From 15.00	Arrival, check in, registration for onsite participants
18.00	Welcome drink
19.00	Dinner

Tuesday 6 July, 2021

- 8.00 – 9.00 Registration (continued) 8.40 – 8.55 – Welcome by CSF
- 9.00 – 10.00 **Keynote I**
Bruno Cochelin, *Centrale Marseille, France*
Computing nonlinear modes in continuum mechanics
- 10.00 – 10.30 **Oleg Gendelman**, *Technion, Haifa, Israel*
Intermodal targeted energy transfer
- 10.30 – 11.00 *Coffee break*
- 11.00 – 11.30 **Tom Hill**, *University of Bristol, UK*
Detecting internal resonance through an extension of a reduced order modelling technique
- 11.30 – 12.00 **David Wagg**, *University of Sheffield, UK*
Real, complex and Hamiltonian normal form transformations in nonlinear dynamics
- 12.00 – 12.30 **Oded Gottlieb**, *Technion, Haifa, Israel*
The influence of dissipation mechanisms on the nonlinear response of nano-resonator panels from two dimensional materials
- 12.30 – 14.00 *Lunch*
- 14.00 – 14.30 **Gaetan Kerschen**, *University of Liege, Belgium*
Analytical, numerical and experimental characterization of superharmonic resonances of nonlinear systems
- 14.30 – 15.00 **Ludovic Renson**, *Imperial College London, UK*
Capturing experimentally-measured bifurcation diagrams using physics-based, data-driven models
- 15.00 – 15.30 **Jörg Wallaschek**, *Leibniz University Hannover, Germany*
Reduced-order modeling of bladed disk structures with frictional nonlinearities
- 15.00 – 16.00 **Matthew Brake**, *Rice University, USA*
Predicting the Nonlinear Characteristics of Jointed Structures
- 16.00 – 16.30 *Coffee break*
- 16.30 – 17.00 **Matt Allen**, *University of Wisconsin-Madison, USA*
System identification and quasi-static modeling for structures with bolted joints: current status and future directions
- 17.00 – 17.30 **Alexander Vakakis**, *University of Illinois at Urbana-Champaign, USA*
Nonlinear dynamical analysis by means of inverse wavelet transformations
- 17.30 – 18.30 **Keynote II**
Bala Balachandran, *University of Maryland, USA*
Dynamics of coupled, nonlinear oscillators with and without noise
- 19.00 *Dinner*

Wednesday 7 July, 2021

- 9.00 – 10.00 **Keynote III**
Ivana Kovacic, *University of Novi Sad, Serbia*
Localization in bio-inspired hierarchical structures
- 10.00 – 10.30 **Fabrizio Vestroni**, *Sapienza University of Rome, Italy*
Nonlinear dynamic features of systems with hysteretic elements
- 10.30 – 11.00 *Coffee break*
- 11.00 – 11.30 **Stefano Lenci**, *Università Politecnica delle Marche, Italy*
1:2 internal resonances in a beam with an axial elastic boundary condition
- 11.30 – 12.00 **Sotirios Natsiavas**, *Aristotle University of Thessaloniki, Greece*
A geometric time-stepping method for multibody systems with frictional impacts
- 12.00 – 12.30 **Yuri Mikhlin**, *Kharkiv Polytechnic Institute, Ukraine*
Analysis of the steady states stability by the analytical and numerical approaches
- 12.30 – 14.00 *Lunch*
- 14.00 – 16.00 Poster session
- 16.00 – 16.30 *Coffee break*
- 16.30 – 17.30 **Tutorial**
George Haller & Shobhit Jain, *ETH Zurich, Switzerland*
Reduction of large nonlinear models and data to spectral submanifolds
- 17.30 – 19.00 Outdoor activity (TBC)
- 19.00 *Conference Dinner*

Thursday 8 July, 2021

- 9.00 – 10.00 **Keynote IV**
Tobias Schneider, *EPFL, Switzerland*
A network of invariant solutions underlying spatio-temporal patterns in inclined layer convection
- 10.00 – 10.30 **Giuseppe Rega**, *Sapienza University of Rome, Italy*
Localization in boundary-interior coupled structures
- 10.30 – 11.00 *Coffee break*
- 11.00 – 11.30 **Paolo Tiso**, *ETH Zurich, Switzerland*
A reduced order model for joints
- 11.30 – 12.00 **Francesco Romeo**, *Sapienza University of Rome, Italy*
Nonlinear dynamics of bistable composite cantilever shells
- 12.00 – 12.30 **Olivier Thomas**, *The Computer Science and Systems Lab., France*
Nonlinear dynamics of piezoelectric structures with geometrical nonlinearities through reduced order models
- 12.30 – 14.00 *Lunch*
- 14.00 – 14.30 **Eleni Chatzi**, *ETH Zurich, Switzerland*
Virtualization of nonlinear systems
- 14.30 – 15.00 **Themistoklis Sapsis**, *MIT, USA*
Extreme events: predictions, analysis and probabilistic quantification
- 15.00 – 15.30 **Robert Szalai**, *University of Bristol, UK*
Data-oriented model order reduction using invariant spectral foliations.
- 15.30 – 16.00 **Melih Eriten**, *University of Wisconsin-Madison, USA*
Identification of material and contact nonlinearities in mechanical testers
- 16.00 – 16.30 *Coffee break*
- 16.30 – 17.00 **Larry Bergman**, *Illinois Aerospace Engineering, USA*
Vibro-impacts originating in wing attachments induce global chaotic effects in the steady-state dynamics of a model airplane
- 17.00 – 17.30 **Steven Shaw**, *Florida Tech, USA*
Frequency stabilization of self-excited oscillators
- 17.30 – 18.30 **Keynote V**
Chiara Daraio, *California Institute of Technology, USA*
Nonlinear, nonreciprocal acoustic systems: from table-top demos to RF devices
- 19.00 *Dinner*

Friday 9 July, 2021

- 9.00 – 9.30 **Gabor Stepan**, *Budapest Univ. of Technology and Economics, Hungary*
Non-smooth bifurcations in delayed tire models of wheel shimmy
- 9.30 – 10.00 **Alessandro Fortunati**, *Sapienza University of Rome, Italy*
Nonlinear wave properties of a cellular metamaterial with local
vibration absorbers
- 10.00 – 10.30 **Keith Worden**, *University of Sheffield, UK*
Nonlinear normal modes and normalizing flows
- 10.30 – 11.00 *Closing remarks and coffee break*
- 11.00 – 11.30 *Take away lunch and departure*

Posters (sorted alphabetically by presenting author)

1. Kerstin Avila, *University of Bremen, Leibniz Institute for Materials Engineering IWT, Germany*

Sloshing experiments compared to a multimodal model and the Duffing equation

2. Antoine Blanchard, *MIT, United States*

Active learning strategies for rare-event statistics

3. Thomas Breunung, *University of Maryland, College Park, United States*

Influence of noise on localized modes in mechanical systems

4. Lawrence Bull, *University of Sheffield, United Kingdom*

Normalising flows and nonlinear normal modes

5. Mattia Cenedese, *ETH Zurich, Switzerland*

Learning spectral submanifolds of mechanical systems from vibration data

6. Kyriakos Alexandros Chondrogiannis, *Department of Civil, Environmental and Geomatic Engineering, ETH Zürich, Switzerland*

On the attenuation properties of lattice structures consisting of impact dampers in periodic arrangement

7. Maor Farid, *Technion, Israel*

Escape problem of a classical particle from a damped nonlinear potential well

8. Majdi Gzal, *Technion Israel Institute of Technology, Haifa, Israel, Israel*

Rapid non-resonant intermodal targeted energy transfer (IMTET) mechanism

9. Dongxiao Hong, *University of Bristol, United Kingdom*

Symmetry breaking: a mechanism to realise targeted energy transfer

10. Pavel Kravets, *Technion, Israel*

Mixed global dynamics of harmonically forced vibro-impact oscillator with dry friction

11. Michael Kwarta, *Structural Dynamics Research Group, University of Wisconsin - Madison, United States*

NIXO-based identification of the dominant terms in a nonlinear equation of motion

12. Mingwu Li, *ETH Zurich, Switzerland*

Model reduction to spectral submanifolds in systems with internal resonance

13. Evangelia Nicolaidou, *University of Bristol, United Kingdom*

Exploring the nature of modal coupling in nonlinear systems

14. Gayane Rudnyeva, *National Technical University "Kharkiv Polytechnic Institute", Ukraine*

Stability of similar nonlinear normal modes under random excitation

15. Thomas Simpson, *ETH Zürich, Switzerland*

Metamodelling of soil structure interaction for wind turbine monopiles using LSTM and autoencoder networks

16. Alessandra Vizzaccaro, *University of Bristol, United Kingdom*

Direct normal form computation for reduced-order models of large FE structures

17. Konstantinos Vlachas, *ETH Zurich, Switzerland*

Reduced order model in a substructural formulation for component-oriented reduction