SECOND INTERNATIONAL NONLINEAR DYNAMICS CONFERENCE

NODYCON 2021 PROGRAM

Edited by
The NODYCON 2021 Program Committee
Sapienza University of Rome

Second International Nonlinear Dynamics Conference Program, Virtual (online) February 16-19, 2021

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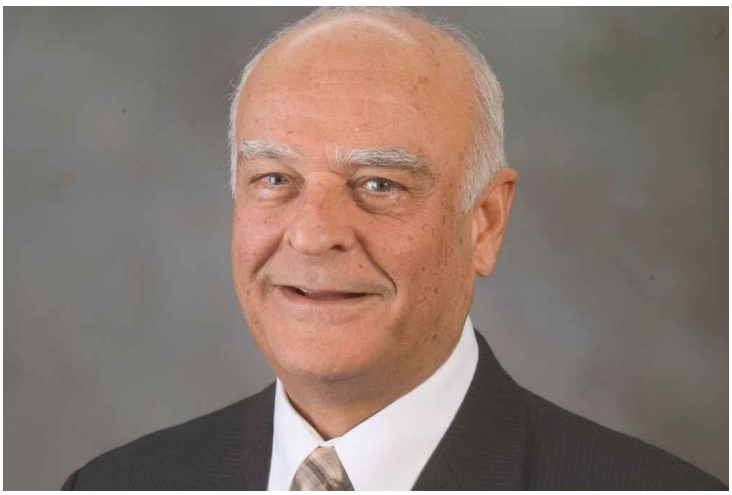
SPONSORS

ALI H. NAYFEH PRIZES

Springer sponsored prizes, named the ALI H. NAYFEH Prizes, in honor of Nonlinear Dynamics's founding editor, the late Professor Ali H. Nayfeh, will be awarded for the best papers presented by graduate students and postdocs at NODYCON 2021.

The Award ceremony will be held during the Closing ceremony, February 19, 2021. The prize for the first place is $500, for the second place $400, and for the third place $300. The Award Committee members decided on the awards based on the quality of the written paper using the criteria of novelty, achievement, and potential impact. Some of the papers were submitted to the NODYCON 2021 Special Issue of Nonlinear Dynamics and others to the NODYCON 2021 Springer Proceedings.

Professor Ali H. Nayfeh
Professor Emeritus of Nonlinear Dynamics



21 December 1933 – 27 March 2017

SPONSORS

- GOLD -

Springer is a leading global scientific, technical and medical portfolio, providing researchers in academia, scientific institutions and corporate R&D departments with quality content through innovative information, products and services. Springer has one of the strongest STM and HSS eBook collections and archives, as well as a comprehensive range of hybrid and open access journals. Springer is part of Springer Nature, a global publisher that serves and supports the research community. Springer Nature aims to advance discovery by publishing robust and insightful science, supporting the development of new areas of research and making ideas and knowledge accessible around the world. As part of Springer Nature, Springer sits alongside other trusted brands like Nature Research, BMC and Palgrave Macmillan.

- GOLD -

With over 400 employees worldwide, Polytec develops, produces, and distributes optical measurement systems for research and industry. The focus is on the technology areas of vibrometry, velocimetry, surface metrology, process analytics, machine vision and other optical technologies. Whether it's in space travel, architecture, medicine, nanotechnology, or mechanical engineering – Polytec expertise is always in demand across all industries. Laser vibrometry has proven its worth as an ideal tool for materials investigations – both for the measurement of structural dynamics and for the non-destructive detection and prevention of signs of fatigue. There is a wealth of applications in functional and long-term structural monitoring and in geological issues. Polytec manufactures a wide range of laser vibrometers that are the acknowledged gold-standard for non-contact vibration measurement. Laser Doppler vibrometers analyze samples of different size, from entire car bodies, large bridge parts over engines and actuators to micron-sized MEMS or delicate HDD components. Measuring the transfer functions, amplitudes and resonance frequencies in a non-intrusive way with the simple “point and shoot” method is the Single Point Vibrometer’s specialty. With the laser-based MPV-800 Multipoint Vibrometer, it is possible to carry out time-synchronous measurements with up to 48 channels and represent both frequency-dependent and time-dependent deflection shapes. The fiber-optic sensor heads are freely configurable and allow to perform flexible measurements – both parallel to a surface or arranged individually around the sample.

- BRONZE -

As a trusted partner, **MSC Software** helps companies improve quality, save time and reduce costs associated with design and test of manufactured products. Our products accurately and reliably predict how products will behave in the real world to help engineers design more innovative products - quickly and cost effectively. MSC Software's technology is used by leading manufacturers for linear and nonlinear finite element analysis (FEA), acoustics, fluid-structure interaction (FSI), multi-physics, optimization, fatigue and durability, multi-body dynamics, and control systems simulation. MSC Software Corporation is part of Hexagon, a leading global provider of information technologies that drive productivity and quality across geospatial and industrial enterprise applications.

- BRONZE -

MTS Systems is a global supplier of test systems and industrial position sensors. The company provides test and measurement solutions to determine the performance and reliability of vehicles, aircraft, civil structures, biomedical materials and devices and raw materials. Examples of MTS products include: aerodynamics simulators, seismic simulators, load frames, hydraulic actuators and sensors. The company operates in two divisions: Test and Sensors. MTS test systems are designed to simulate the forces and motions that materials, products and structures are expected to encounter. MTS Sensors are used by manufacturers of plastic injection molding machines, steel mills, fluid power, oil and gas, medical, wood product processing equipment, mobile equipment and alternative energy. Sensors division products are also used to measure fluid displacement, such as liquid levels for customers in the process industries. With the acquisition of PCB Piezotronics Inc. in 2016, MTS has increased Sensor products - microphones, vibration, pressure, force, torque, load, and strain sensors - and presence.

Sponsors Virtual Booths

WEDNESDAY – February 17, 2021	
9:00am - 10:30am CET (Central Time Europe)	POLYTEC
10:30am - 12:00pm CET (Central Time Europe)	MTS
3.30pm - 5:00pm CET (Central Time Europe)	SPRINGER

THURSDAY – February 18, 2021	
9:00am - 10:30am CET (Central Time Europe)	POLYTEC
10:30am - 12:00pm CET (Central Time Europe)	MSC
3.30pm - 5:00pm CET (Central Time Europe)	SPRINGER

Instructions for Conference Participants

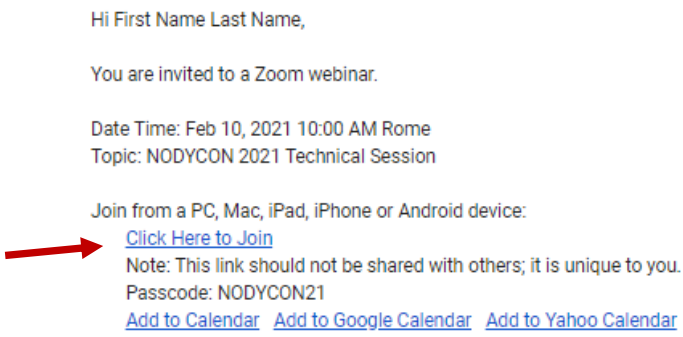
NODYCON 2021 (virtual) will be held via ZOOM video conferencing service in Webinar mode. Detailed instructions are provided below.

Speakers/Panelists

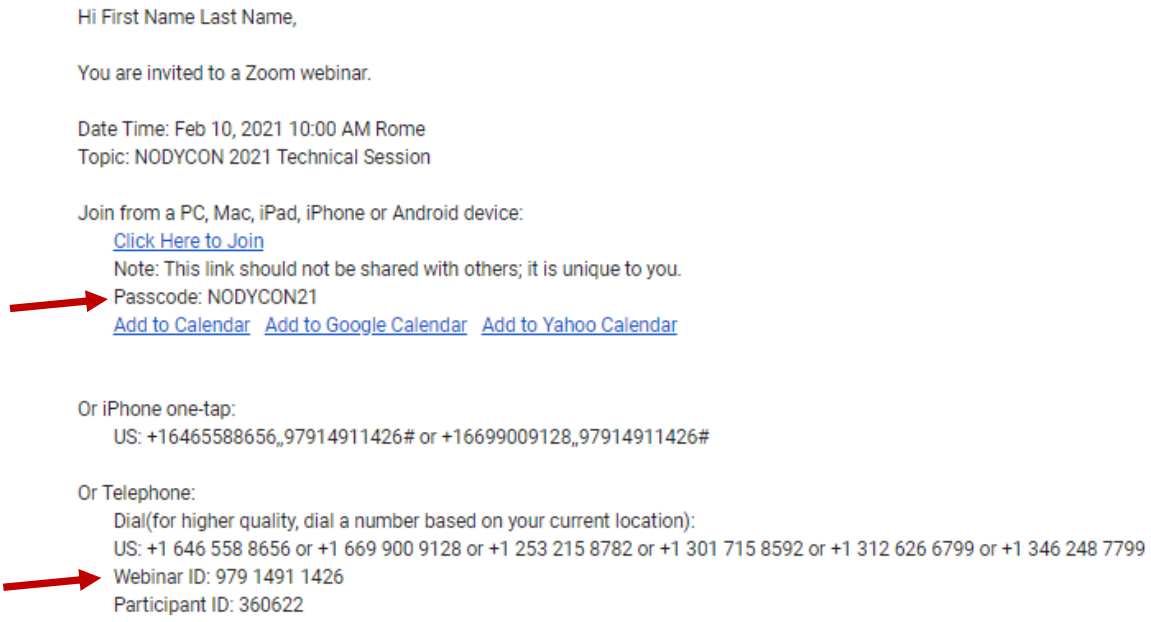
An internet connection with upload and download speed of at least 10 Mb/s is recommended. Speakers/Panelists must download ZOOM on their own devices and, although it is not mandatory, it is better to employ a free personal Zoom account.

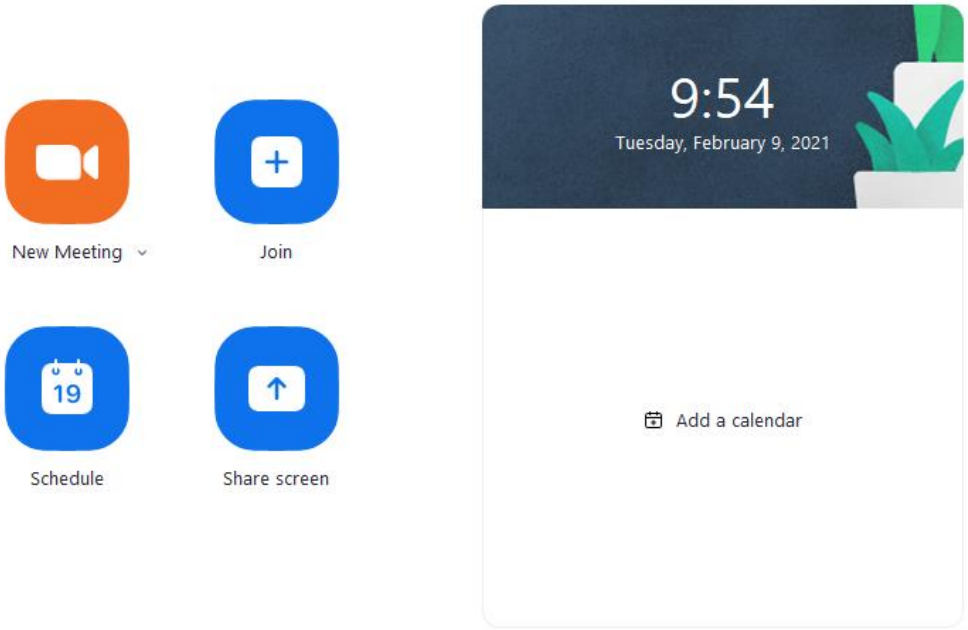
Join the session

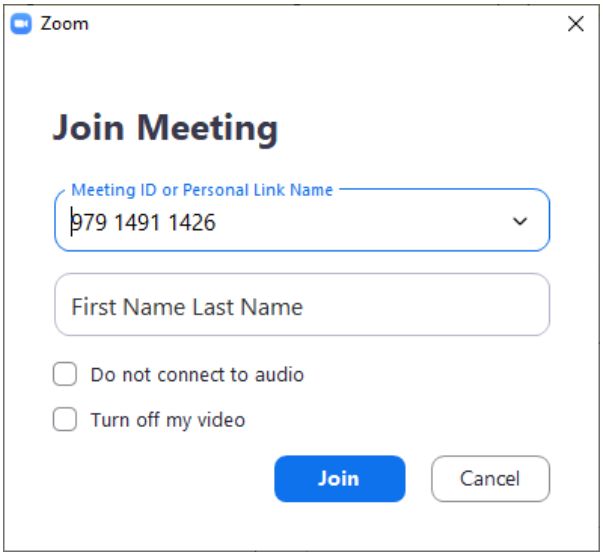
Speakers/Panelists will receive an e-mail containing a personal link to join the session. Just clicking on the text "Click here to Join" (see the red arrow below) the Speaker/Panelist will access the session at the scheduled time.



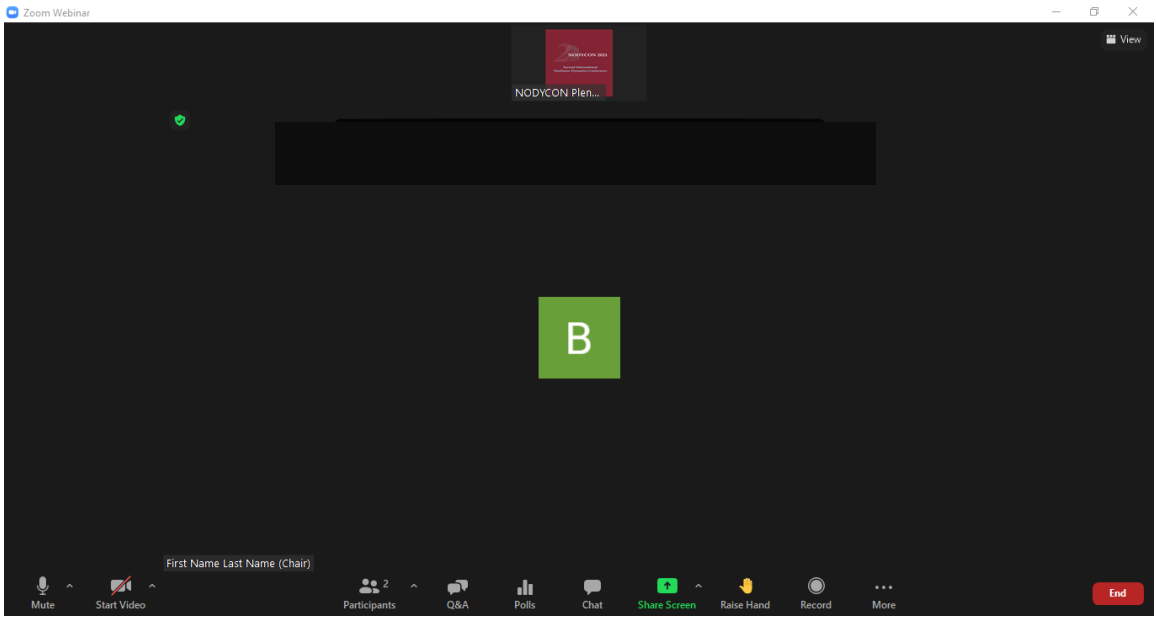
Another way to join the session is to input the Webinar ID number, "Your Name, Last Name", and the passcode (see the red arrows below).



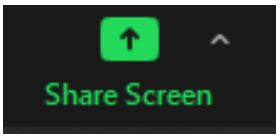




It is warmly recommended to employ a Laptop or Desktop equipped with external headphones or earphones and microphone. The camera must be centered on your own face up to the shoulders. If you use a laptop built-in camera, please place the device at a suitable height.
The following screenshot shows the Zoom window and toolbar for a Speaker/Panelist.



By default, only the Speakers/Panelists have the privilege to use camera and audio. In case of live presentations, the Speaker/Panelist will be invited by the Chair of the session to share his/her screen to show the presentation. This action is performed by clicking on "Share Screen" button in the ZOOM toolbar (see the screenshot below) and by choosing the content to share which can be the whole screen or the presentation file only. The presentation file (Power Point, Beamer, Keynote, etc.) must be opened by the Speaker/Panelist before sharing and should be set to presentation mode.

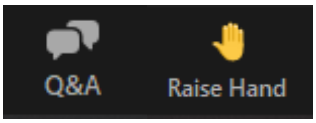


At the end of the presentation the Speaker/Panelist must click on "Stop Share" to stop the sharing (see screenshot below).

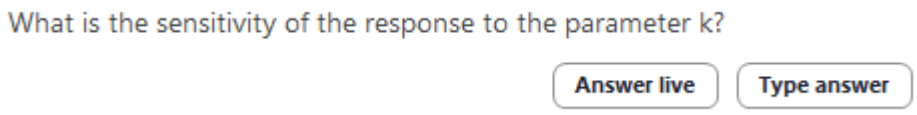
In case of pre-recorded presentation, the Host of the session will run the video uploaded by the Speaker/Panelist via the webtool at https://nodycon.org/2021/.

Q&A session

The Q&A session will follow where the Attendees can ask questions to the Speakers/Panelists by using the Q&A chat or using the "Raise Hand" option (see the screenshots below) in the Zoom toolbar.



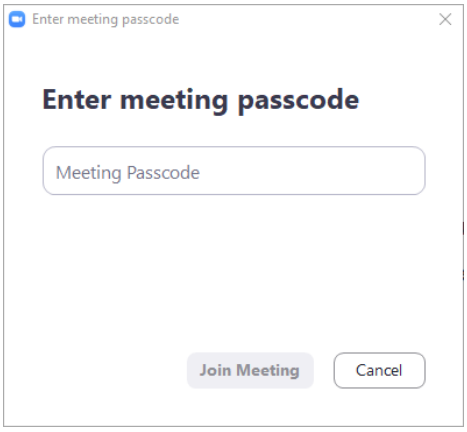
In the first case, the question will be written by the Attendee in the Q&A text box and the Chair of the session will allow the Speaker/Panelist to provide a live answer (see "Answer live" below) or to type the answer in the Q&A text box (see "Type answer" in the example below).



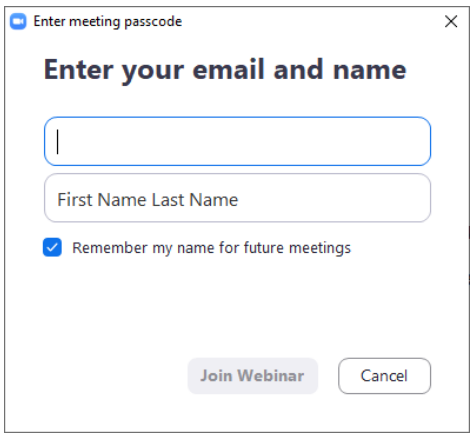
In the second instance (Raise Hand), the Host of the session (following the Chair authorization) will temporarily open the microphone of the Attendee or promote him/her to Speaker/Panelist role (microphone and camera on).

ATTENDEES

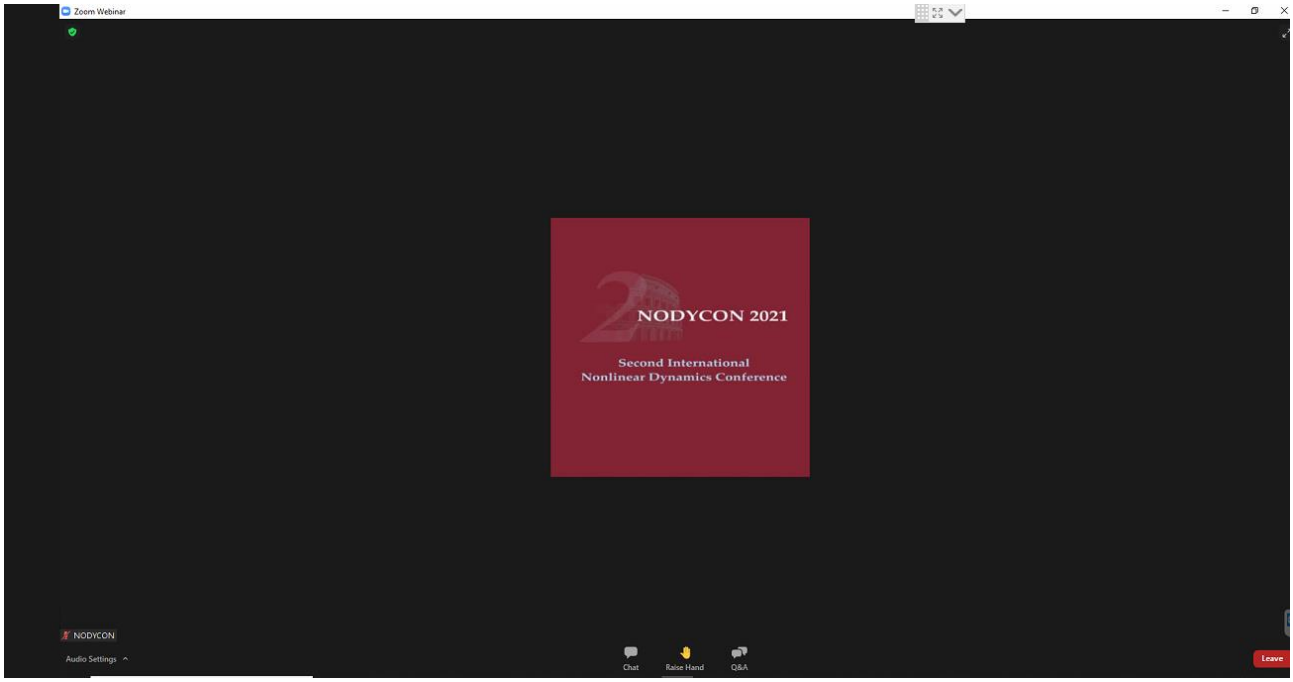
An internet connection with upload and download speed at least of 3 Mb/s is required to attend the Conference. The links to join the selected sessions and passcode will be published in the NODYCON 2021 website (https://nodycon.org/2021) under LIVE PROGRAM and also included in the Final Program pdf file. Attendees must download ZOOM on their own devices.
After clicking on the link, Attendees will be directed to a webpage where the meeting passcode will be required (see the screenshot below).



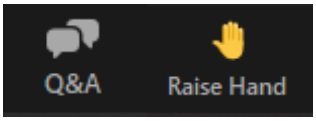
Thus, if the Attendee is not logged with his/her personal Zoom account (which is not strictly required), email address, First Name and Last name will be asked.



The following screenshot shows the Zoom window for Attendees.



By default, only the Speakers/Panelists have the privilege to use camera and audio and share the screen.
Questions to the Speaker/Panelist can be asked when the Chair of the session allows them by using the "Q&A" chat or using the "Raise Hand" option (see the picture below) in the ZOOM toolbar.



In the first case, the Attendee writes the question in the Q&A text box and the Chair of the session allows the Speaker/Panelist to provide a live answer or to type the answer in the Q&A text box. In the second case (Raise Hand), the Host of the session (upon the Chair request) will temporarily unmute the Attendee to let him/her ask a live question. The Attendee can choose this option only if he/she is joining the session with a device equipped with microphone.

Social Program

Through Raphael's Eyes. The Renaissance as a Vision of Beauty and Greatness

Dr. Irene Baldriga, Sapienza Professor of Art History

The cultural Lecture touches on Raphael and the Renaissance Arts at the Vatican Museums.

Michelangelo is well known for his artistic achievements in the Sistine Chapel. But while Michelangelo was covering the ceiling of the Sistine Chapel with his frescos, another artist was working on his own masterpieces, a few rooms away in the Vatican apartments. His name was Raphael and, although he was only in his mid-twenties, he was recognized as one of the most talented painters of the age, chosen by Pope Julius II for the daunting task of decorating his private rooms. This lecture will delve into the Renaissance as a vision of beauty and greatness through Raphael's eyes. As the Renaissance marked the transition from the Middle Ages to modernity, the lecture sheds light onto the nuances and subtleties surrounding the formidable Renaissance age which led to such breakthroughs in art history and culture. A welcome message for the post-pandemic era.

Raphael, The Borgo Fire, 1517, Vatican Rooms, Vatican Museums.

WORKSHOPS

MONDAY – February 15, 2021	
10:00am - 1:00pm CET (Central Time Europe)	**WORKSHOP 1** – MR. D. CATELANI MULTIDISCIPLINARY APPROACH TO HIGH-LIFT DEVICE PROJECT: MSC SOFTWARE INTEGRATED SIMULATION TOOLS
2:00pm - 5:00pm CET (Central Time Europe)	**WORKSHOP 2** – PROF. H. DANKOWICZ CONTINUATION TECHNIQUES FOR PEDESTRIANS AND MOUNTAIN CLIMBERS USING THE COCO SOFTWARE PLATFORM

Sessions Acronyms

A - Concepts and methods in nonlinear dynamics		B - Nonlinear dynamics of mechanical and structural systems	
FSI	Fluid-structure interaction I - II - III - IV	**MSS**	Mechanical systems and structures I - II - III - IV
NSS	Nonsmooth systems I - II - III - IV	**ED**	Experimental dynamics I - II
CSU	Chaotic systems and uncertainty I - II - III	**SIS**	System identification and SHM I - III - IV
BDI	Bifurcation and dynamic instability I - II - III	**AS**	Aerospace structures
CND	Computational nonlinear dynamics I - II - III - IV - V	**MSO**	Multistable oscillators
NW	Nonlinear waves I - II - III	**CPM**	Constitutive and phenomenological models
MBS	Multibody systems	**MFS**	Multifunctional structures I - II
ROM	Reduced-order models I - II	**MIET**	Modal interactions and energy transfer I - II
TD	Transient dynamics	**RS**	Rotating systems I - II
AT	Analytical techniques I - II - III - IV - V	**PED**	Passive energy damping
C - Nonlinear dynamics and control		**D - Recent trends in nonlinear dynamics**	
NVC	Nonlinear vibration control I - II - III - IV	**EH**	Energy harvesting I - II - III – IV
SA	Sensors and actuators I - II	**MNS**	MEMS/NEMS I - II - III - IV
CNS	Control of nonlinear systems I - II - III	**MM**	Metamaterials I - II
Special Sessions		**BCR**	Biocapsule robots I - II
		BSD	Biological systems dynamics I - II
SS-C19	Complex dynamics of COVID-19 I - II - III	**SN**	Stochasticity and noise I - II
SS-LIM	In memory of Prof. L. I. Manevitch	**NPBED**	Nonlinear phenomena in bio- and ecosystems dynamics

DAY 1 – Tuesday, February 16, 2021							
8:30am - 9:00am	Opening Session and Welcome						
9:00am - 10:10am	Keynote Session I						
10:10am - 10:30am	Coffee Break						
10:30am - 11:40am	Keynote Session II						
11:40am - 12:00pm	Coffee Break						
CET (Central Time Europe)	Zoom Virtual Room	Zoom Virtual Room	Zoom Virtual Room	Zoom Virtual Room	Zoom Virtual Room	Zoom Virtual Room	Zoom Virtual Room
12:00pm - 1:00pm	NSS - I	BDI - I	AT - I	MSS - I	SS-C19 - I	MNS - I	SN - I
1:00pm - 2:00pm	Lunch Break						
2:00pm - 3:10pm	Keynote Session III						
3:10pm - 3:25pm	Coffee Break						
3:25pm - 5:00pm	Keynote Session IV						
5:00pm - 5:30pm	Panel						
5:30pm - 6:30pm	FSI - I	CND - I	SIS - I	CPM	RS - I	SA - I	EH - I

DAY 2 – Wednesday, February 17, 2021							
CET (Central Time Europe)	Zoom Virtual Room	Zoom Virtual Room	Zoom Virtual Room	Zoom Virtual Room	Zoom Virtual Room	Zoom Virtual Room	Zoom Virtual Room
9:00am - 10:15am	**FSI - II**	**NSS - II**	**MIET - I**	**PED**	**EH - II**		
10:15am - 10:30am	**Coffee Break**						
10:30am - 12:00pm	**AT - II**	**CSU - I**	**CND - II**	**NVC - I**	**CNS - I**	**SS-LIM**	
12:00pm - 12:15pm	**Coffee Break**						
12:15pm - 1:15pm	**ROM - I**	**ED - I**	**SA - II**	**BCR - I**	**EH - III**		
1:15pm - 2:15pm	**Lunch Break**						
2:15pm - 3:15pm	**Social Program** - ***Through Raphael's eyes. The Renaissance as a vision of beauty and greatness***						
3:15pm - 3:30pm	**Coffee Break**						
3:30pm - 5:00pm	**BDI - II**	**CND - III**	**AT - III**	**MSS - II**	**NVC - II**	**CNS - II**	**EH - IV**
5:00pm - 5:15pm	**Coffee Break**						
5:15pm - 6:30pm	**NSS – III**	**NW - I**	**MSS - III**	**MFS - I**	**MNS - II**	**SS-C19 - II**	

DAY 3 – Thursday, February 18, 2021

CET (Central Time Europe)	Zoom Virtual Room	Zoom Virtual Room	Zoom Virtual Room	Zoom Virtual Room	Zoom Virtual Room	Zoom Virtual Room	Zoom Virtual Room
9:00am - 10:15am	NSS - IV	CND - IV	NW - II	MBS	CNS - III	SS-C19 - III	
10:15am - 10:30am	Coffee Break						
10:30am - 12:00pm	CSU - II	BDI - III	SIS - III	MFS - II	RS - II	NVC - III	NPBED
12:00pm - 12:15pm	Coffee Break						
12:15pm - 1:15pm	TD	AT - IV	MIET - II	MNS - III	MM - I		
1:15pm - 2:15pm	Lunch Break						
2:15pm - 3:15pm	Keynote Session V						
3:15pm - 3:30pm	Coffee Break						
3:30pm - 5:00pm	CSU - III	CND - V	NW - III	ED - II	NVC - IV	SN - II	
5:00pm - 5:15pm	Coffee Break						
5:15pm - 6:30pm	FSI - III	ROM - II	AT - V	MSS - IV	SIS - IV	BCR - II	BSD - I

DAY 4 – Friday, February 19, 2021			
CET (Central Time Europe)	Zoom Virtual Room	Zoom Virtual Room	Zoom Virtual Room
9:00am - 10:15am	**MSO**	**MNS - IV**	**MM - II**
10:15am - 10:30am	**Coffee Break**		
10:30am - 12:00pm	**FSI - IV**	**AS**	**BSD - II**
12:00pm - 1:30pm	**Lunch Break**		
1:30pm - 2:30pm	**NODYS General Assembly Meeting**		
2:30pm - 2:45pm	**Coffee Break**		
2:45pm - 3:15pm	**Closing Ceremony**		

PLENARY PROGRAM

TUESDAY – February 16, 2021

8:30am - 8:40 am CET	WELCOME, W. LACARBONARA
8: 40am - 8:45am CET	ADDRESS BY SAPIENZA RECTOR A. POLIMENI
8:45am - 8:50am CET	MINUTE OF SILENCE, G. REGA IN MEMORY OF D.T. MOOK, L. MANEVITCH, I. I. BLECHKMAN
8:50am - 9:00am CET	NODYCON 2021 SPONSORS

PLENARY KEYNOTE LECTURES

Chairs: Giuseppe Rega, Friedrich Pfeiffer

G. Haller	Fast reduction of nonlinear finite-element models to spectral submanifolds	9:00am – 9:35am
M.P. Cartmell	Towards a high-performance Foucault pendulum for the measurement of relativistic gravity	9:35am – 10:10am
Coffee break		10:10am – 10:30am

Chairs: Fabrizio Vestroni, Claude-Henri Lamarque

H. Yabuno	Applications of self-excited oscillation and weakly mode coupling to ultrasensitive micro-sensors	10:30am – 11:05am
Li-Qun Chen	Internal resonances and applications in vibratory energy harvesting	11:05am – 11:40am
Lunch break		1:00pm – 2:00pm

Chairs: Sotirios Natsiavas, Muhammad Hajj

C. Nataraj	Can nonlinear dynamics improve medical diagnostics?	2:00pm – 2:35pm
A. F. Vakakis	Nonlinear acoustic non-reciprocity	2:35pm – 3:10pm
Coffee break		3:10pm – 3:25pm

Special Session & Panel "**Complex dynamics of COVID-19: modeling, prediction and control**"

Chairs: C. Nataraj, Harry Dankowicz

B. Balachandran	COVID-19: Evolution of infection dynamics	3:25pm – 4:00pm
YangQuan Chen	Modeling, prediction, mitigation and vaccine policy for COVID-19 using big data and fractional calculus	4:00pm – 4:30pm
Jose Machado	Computational modeling and data analysis of COVID19 outbreak	4:30pm – 5:00pm
	Panel discussion	5:00pm – 5:30pm

WEDNESDAY – February 17, 2021

2:15pm - 3:15pm CET (Central Time Europe)	**THROUGH RAPHAEL'S EYES. THE RENAISSANCE AS A VISION OF BEAUTY AND GREATNESS** DR. IRENE BALDRIGA, SAPIENZA UNIVERSITY

THURSDAY – February 18, 2021

PLENARY KEYNOTE LECTURES

Chairs: J. Tenreiro Machado, Angelo Luongo

Anita Lekhwani (Springer) **Walter Lacarbonara**	30 Years of Nonlinear Dynamics	2:15pm – 2:40pm
J. Kurths	Exploring predictability of extreme climate events via a complex network approach	2:40pm – 3:15pm

FRIDAY – February 19, 2021

1:30pm - 2:30pm CET (Central Time Europe)	NODYS GENERAL ASSEMBLY MEETING
2:45pm - 3:15pm CET (Central Time Europe)	ALI H. NAYFEH AWARD & CLOSING

Technical Sessions

DAY 1 – Tuesday, February 16, 2021
12:00pm – 1:00pm CET (Central European Time)

DAY 1 – Tuesday, February 16, 2021		12:00pm – 1:00pm
Concepts and methods in nonlinear dynamics **NONSMOOTH SYSTEMS I** Chairs: Fotios Georgiades, Alessandro Tasora		Zoom Virtual Room
Alessandro Tasora, Dario Mangoni, Simone Benatti	Solving non-smooth dynamic problems using the alternating direction method of multipliers	12:00pm – 12:15pm
Alexey Platonov	Stability analysis for a class of non-stationary impulsive switched systems	12:15pm – 12:30pm
Dheeraj Tripathi, Sai Vishal Gali, Chandan Bose, Venkatramani Jagadish	Response analysis of coupled non-smooth nonlinear aeroelastic system subjected to stochastic input fluctuations	12:30pm – 12:45pm
Weijia Yang, Yiwen Liao, Zhigao Zhao, Jiandong Yang	Limit cycle oscillation induced by backlash in hydropower regulation process	12:45pm – 1:00pm

DAY 1 – Tuesday, February 16, 2021		12:00pm – 1:00pm
Concepts and methods in nonlinear dynamics **BIFURCATION AND DYNAMIC INSTABILITY I** Chairs: Andrea Arena, Tamas Kalmar-Nagy		Zoom Virtual Room
Simona Di Nino, Angelo Luongo	Nonlinear dynamics of a base-isolated beam under turbulent wind flow	12:00pm – 12:15pm
Martin Volvert, Gaetan Kerschen	Characterizing fundamental, superharmonic and subharmonic resonances using phase locked nonlinear modes	12:15pm – 12:30pm
Yaobing Zhao, Henghui Lin, Lincong Chen	Influence of temperature on bifurcation analysis of suspended cables close to two-to-one internal resonance	12:30pm – 12:45pm
Francesco D'Annibale, Manuel Ferretti	On the effects of added devices on the nonlinear behaviour of the damped Beck beam	12:45pm – 1:00pm

DAY 1 – Tuesday, February 16, 2021		12:00pm – 1:00pm
Concepts and methods in nonlinear dynamics **ANALYTICAL TECHNIQUES I**		Zoom Virtual Room
Chairs: Claude-Henri Lamarque, Alice Cicirello		
Ivana Kovacic	Externally excited purely nonlinear oscillators: exact steady-state solutions, their approximations and further benefits	12:00pm – 12:15pm
Luca Marino, Alice Cicirello	Dynamic response features and motion regimes of multimodal systems with Coulomb damping	12:15pm – 12:30pm
Angelo Luongo, Arnaldo Casalotti, **Daniele Zulli**	Perturbation analysis for large amplitude vibrations of beam-like pipes with deformable cross-section	12:30pm – 12:45pm
Anton Belyakov, Alexander Seyranian	Expansion of evolution matrix and Lyapunov exponents with respect to parameters	12:45pm – 1:00pm

DAY 1 – Tuesday, February 16, 2021		12:00pm – 1:00pm
Nonlinear dynamics of mechanical and structural systems **MECHANICAL SYSTEMS AND STRUCTURES I**		Zoom Virtual Room
Chairs: Oleg Gendelman, Tetyana Shmatko		
Haoran Xu, Yuda Hu	Magnetoelastic nonlinear natural vibration analysis of an annular plate in induced non-uniform magnetic field	12:00pm – 12:15pm
Guangrong Chen, Sheng Guo, Bowen Hou, Junzheng Wang	Generalized SLIP model for legged robots	12:15pm – 12:30pm
Mehdi Akbarzadeh, Sebastian Oberst, Y. K. Chiang, B. Halkon, A. Melnikov, D. Powell	Numerical study of acoustic radiation forces to contactless excite a microcantilever	12:30pm – 12:45pm
Sivakoteswararao Ikkurthi, Priyank Prakash, **Ashok Kumar Pandey**	Analysis of Half-Car Model with Nonlinear Damper under Sinusoidal Road Excitation	12:45pm – 1:00pm

DAY 1 – Tuesday, February 16, 2021		12:00pm – 1:00pm
Recent trends in nonlinear dynamics **MEMS/NEMS I**		Zoom Virtual Room
Chairs: Stefano Lenci, Dumitru Caruntu		
Lifeng Wang *(Minikeynote)*	Nonlinear thermal vibration of typical nanostructures	12:00pm – 12:30pm
Ata Keşkekler, Oriel Shoshani, Martin Lee, Herre van der Zant, Peter Steeneken, **Farbod Alijani**	Tuning nonlinear damping of atomically thin membranes	12:30pm – 12:45pm
Laura Ruzziconi, Nizar Jaber, Lakshmoji Kosuru, Mohammed Bellaredj, Mohammad Younis	Global analysis and experimental dynamics of the 2:1 internal resonance in the higher-order modes of a MEMS microbeam	12:45pm – 1:00pm

DAY 1 – Tuesday, February 16, 2021		12:00pm – 12:45pm
Recent trends in nonlinear dynamics **STOCHASTICITY AND NOISE I**		Zoom Virtual Room
Chairs: Dario De Domenico, Giuseppe Quaranta		
Xiao-Ming Liu	Periodic solution of Mathieu system induced by fuzzy uncertainty	12:00pm – 12:15pm
Mahashweta Patra, Sayan Gupta	Stochastic bifurcations in three-dimensional piecewise smooth systems	12:15pm – 12:30pm
Varun H S, Aswathy M. S., Sunetra Sarkar	Stochastic bifurcation in an aeroelastic system with additive noise.	12:30pm – 12:45pm

DAY 1 – Tuesday, February 16, 2021		12:00pm – 12:45pm
Special Session **COMPLEX DYNAMICS OF COVID-19: MODELING, PREDICTION AND CONTROL I**		Zoom Virtual Room
Chair: Jun Ma		
Stefano Iacus, Francesco Sermi, Spyridon Spyratos, Dario Tarchi, Michele Vespe	How fully anonymized and aggregated mobile positioning data can help in tracking and controlling the COVID-19 pandemic	12:00pm – 12:15pm
Lihong Guo, Yanting Zhao, YangQuan Chen	Prediction and control of the impact of the onset of influenza season on the spread of COVID-19	12:15pm – 12:30pm
Yanting Zhao, Weiyuan Ma, Lihong Guo, YangQuan Chen	A fractional order age-structured generalized SEIR model: The role of “COVID-19 Symptom Data Challenge" dataset	12:30pm – 12:45pm

DAY 1 – Tuesday, February 16, 2021
5:30pm – 6:30pm CET (Central European Time)

DAY 1 – Tuesday, February 16, 2021		5:30pm – 6:30pm
Concepts and methods in nonlinear dynamics **FLUID-STRUCTURE INTERACTION I**		Zoom Virtual Room
Chairs: Narakorn Srinil, Abdessattar Abdelkefi		
Adam Bouma, Widad Vossri, Rui Vasconcellos, Abdessattar Abdelkefi	Insights on the stall and unsteadiness effects on the nonlinear responses of flutter-based aeroelastic systems	5:30pm – 5:45pm
Renato Orsino, Celso Pesce, Fernando Toni, Wagner Defensor Filho, Guilherme Franzini	A 3D nonlinear Reduced-Order Model of a cantilevered aspirating pipe under VIV	5:45pm – 6:00pm
Letícia Madi, Guilherme Vernizzi, Celso Pesce, Wagner Defensor Filho	3D reduced order model for an orthotropic stiffened piezoelectric cantilevered flexible cylinder under VIV	6:00pm – 6:15pm
Widad Yossri, Adam Bouma, Samah Ben Ayed, Rui Vasconcellos, Abdessattar Abdelkefi	Nonlinear modeling and characterization of wing-based systems with stall effects	6:15pm – 6:30pm

DAY 1 – Tuesday, February 16, 2021		5:30pm – 6:30pm
Concepts and methods in nonlinear dynamics **COMPUTATIONAL NONLINEAR DYNAMICS I**		Zoom Virtual Room
Chairs: Ludovic Renson, Themistoklis Sapsis		
Alireza Mojahed, Lawrence Bergman, Alexander Vakakis	A New Numerical Inverse Wavelet Transform and its Application to Dynamics	5:30pm – 5:45pm
Mark Blyth, Lucia Marucci, Ludovic Renson	Local surrogate models for control-based continuation of multiple-timescale systems	5:45pm – 6:00pm
Merten Stender, Norbert Hoffmann	Introducing an open-source software for computing the basin stability of multi-stable dynamical systems	6:00pm – 6:15pm
Stephen Guth, Themistoklis Sapsis	Analytic Methods for Estimating the Effects of Stochastic Intermittent Loading on Fatigue Crack Nucleation	6:15pm – 6:30pm

DAY 1 – Tuesday, February 16, 2021		5:30pm – 6:30pm
Nonlinear dynamics of mechanical and structural systems **SYSTEM IDENTIFICATION AND SHM I**		Zoom Virtual Room
Chairs: Sami Masri, Annamaria Pau		
Antoine Blanchard, Themistoklis Sapsis	Output-weighted importance sampling for uncertainty quantification	5:30pm – 5:45pm
Matthew Vasquez, Micah Cheng-Guajardo, Alex Binder, Samantha Ceballes, Sandra Zimmerman, Abdessattar Abdelkefi	Nonlinear thermoelastic modeling and uncertainty quantification in cylindrical structures with imperfections in boundary conditions	5:45pm – 6:00pm
Samuel Rudy, Themistoklis Sapsis	Sparse methods for automatic relevance determination and applications to dynamical systems	6:00pm – 6:15pm
Robert Szalai	Invariant spectral foliations for model order reduction and synthesis	6:15pm – 6:30pm

DAY 1 – Tuesday, February 16, 2021		5:30pm – 6:15pm
Nonlinear dynamics of mechanical and structural systems **CONSTITUTIVE AND PHENOMENOLOGICAL MODELS**		Zoom Virtual Room
Chairs: Luciano Rosati, Eleni Chatzi		
Jin-Song Pei, Biagio Carboni, Walter Lacarbonara	Modeling Asymmetric Hysteresis Inspired and Validated by Experimental Data	5:30pm – 5:45pm
Bruno Areias, Marco Parente, Fernanda Gentil, António Ferreira, Renato Natal Jorge	Comparison of two alternative material approaches applied in a straight cochlear implant, a numerical study	5:45pm – 6:00pm
Nicolò Vaiana, Davide Pellecchia, Salvatore Sessa, Luciano Rosati	Modeling of the axial hysteretic behavior of Wire Rope Isolators using a novel asymmetric rate-independent model	6:00pm – 6:15pm

DAY 1 – Tuesday, February 16, 2021		5:30pm – 6:30pm
Nonlinear dynamics of mechanical and structural systems **ROTATING SYSTEMS I**		Zoom Virtual Room
Chairs: Mohammad Al-Shudeifat, Fotios Georgiades		
Mohammad Al-Shudeifat	Negative potential energy and stiffness content in accelerated cracked rotor system	5:30pm – 5:45pm
Lucas Volpi, Thiago Ritto	Nonlinear drill-string vibrations with random distributed unbalance	5:45pm – 6:00pm
Anthony Quintana, Rui Vasconcellos, Abdessattar Abdelkefi	Nonlinear characterization of the structural discontinuity effects on whirl flutter of a rotor-nacelle system	6:00pm – 6:15pm
Abdelghani Chelihi, **Gabriele Perozzi**, Chouki Sentouh	Optimal direct adaptive model-free controller for twin rotor MIMO system using Legendre polynomials and PSO algorithm	6:15pm – 6:30pm

DAY 1 – Tuesday, February 16, 2021		5:30pm – 6:30pm
Nonlinear dynamics and control **SENSORS AND ACTUATORS I**		Zoom Virtual Room
Chairs: Eihab Abdel-Rahman, Hadi Arvin		
Giulia Lanzara	Experimental demonstration of fairly flat frequency response of an electrospun PVDF fiber mat	5:30pm – 5:45pm
Giulia Lanzara	Locally actuated electrospun piezoelectric webs	5:45pm –6:00pm
Ibrahim Gebrel, Ligang Wang, Samuel Asokanthan	Influence of Model Nonlinearities on the Dynamics of Ring-type Gyroscopes	6:00pm – 6:15pm
Julio Cesar Basilio, José Geraldo Telles Ribeiro, Americo Cunha Jr, Tiago Roux Oliveira	An optimal fractional LQR-based approach applied to a cart-pendulum system	6:15pm – 6:30pm

DAY 1 – Tuesday, February 16, 2021		5:30pm – 6:30pm
Recent trends in nonlinear dynamics **ENERGY HARVESTING I**		Zoom Virtual Room
Chairs: Muhammad Hajj, Stephanos Theodossiades		
Ben Gunn, **Stephanos Theodossiades**, Steve Rothberg	A passively self-tuned torsional vibration energy harvester	5:30pm – 5:45pm
Adam Bouma, Rui Vasconcellos, Abdessattar Abdelkefi	Impacts of multi-segmented discontinuous functions on the dynamics of piezoaeroelastic energy harvesters	5:45pm – 6:00pm
Americo Cunha Jr	The cross-entropy method for optimization of energy harvesting systems	6:00pm – 6:15pm
Jose M. Balthazar, **Angelo M. Tusset**, Rodrigo T. Rocha, Jorge L.P. Felix, Marcus Varanis, Clivaldo Oliveira, Mauricio Ribeiro, Itamar Iliuk, Grzegorz Litak	On energy harvesting with time-varying frequency by using magneto piezo elastic oscillators with memory	6:15pm – 6:30pm

DAY 2 – Wednesday, February 17, 2021
9:00am – 10:15am CET (Central European Time)

DAY 2 – Wednesday, February 17, 2021		9:00am – 10:15am
Concepts and methods in nonlinear dynamics **FLUID-STRUCTURE INTERACTION II** Chairs: Emmanuel Gourdon, Narakorn Srinil		Zoom Virtual Room
Xugang Hua *(Minikeynote)*	Multi-mode vortex-induced vibration and its suppression of long-span suspension bridges	9:00am – 9:30am
Victoria Kurushina, Narakorn Srinil, Juan Padrino, David Swailes	Phenomenological multimode models for flexible pipelines transporting slug flows and undergoing vortex-induced vibrations	9:30am – 9:45am
Rik Mondal, Chandan Bose, Sirshendu Mondal	Synchronization study on the vortex-induced vibrations using wake oscillator model	9:45am – 10:00am
Janis Viba, Grigory Panovko, Alexander Gouskov, **Martins Irbe**	Approximate model of flat ribbon vibrations in the wind	10:00am – 10:15am

DAY 2 – Wednesday, February 17, 2021		9:00am – 10:15am
Concepts and methods in nonlinear dynamics **NONSMOOTH SYSTEMS II** Chairs: Gabor Stepan, Giuseppe Rega		Zoom Virtual Room
Mate Antali, Gabor Stepan	Slipping-rolling transitions of a body with two contact points	9:00am – 9:15am
Yusheng Zhou, Zaihua Wang	State-dependent switching law for stabilization to a switched time-delay system with two unstable subsystems	9:15am – 9:30am
Dmitri Knyazkov, Tatiana Figurina	Properties of the motion of several interacting bodies under periodic excitation	9:30am – 9:45am
Pankaj Kumar, S. Narayanan, Sayan Gupta	Dynamics of discontinuous nonlinear oscillators with compliant contacts subjected to combined harmonic and random loadings	9:45am – 10:00am
Sai Vishal Gali, Ashwad Raaj, Chandan Bose, Venkatramani Jagadish	Effects of system parameters on the synchronization characteristics of a pitch-plunge aeroelastic system with coupled non-smooth nonlinearity	10:00am – 10:15am

DAY 2 – Wednesday, February 17, 2021		9:00am – 10:15am
Nonlinear dynamics of mechanical and structural systems **MODAL INTERACTIONS AND ENERGY TRANSFER I**		Zoom Virtual Room
Chairs: Yannis Georgiou, Marco Lepidi		
Houjun Kang *(Minikeynote)*	Planar nonlinear dynamic analysis of cable-stayed bridge considering support stiffness	9:00am – 9:30am
Vinciane Guillot, **Alireza Ture Savadkoohi**, Claude-Henri Lamarque	Study of an electromechanical absorber while the main structure present a 1:3 internal resonance	9:30am – 9:45am
Yannis Georgiou	On learning the impact dynamics of a physical beam structure coupled to a multi-stable continuum	9:45am – 10:00am
Giorgio Gobat, Cyril Touzé, Louis Guillot, Bruno Cochelin, Attilio Frangi	Investigation of quasi-periodic solutions in nonlinear oscillators featuring internal resonance	10:00am – 10:15am

DAY 2 – Wednesday, February 17, 2021		9:00am – 10:00am
Nonlinear dynamics of mechanical and structural systems **PASSIVE ENERGY DAMPING**		Zoom Virtual Room
Chairs: Luciano Rosati, Michael McFarland		
Andrea Salvatore, Biagio Carboni, Walter Lacarbonara	Nonlinear dynamic response of a negative stiffness-shape memory alloy isolation system	9:00am – 9:15am
Nicola Menga, Francesco Bottiglione, Giuseppe Carbone	Nonlinear viscoelastic damping for seismic isolation	9:15am – 9:30am
Hari Prasad Chintha, Animesh Chatterjee	Identification of non-polynomial forms of damping nonlinearity in dynamic systems using harmonic probing and higher order FRFs	9:30am – 9:45am
Zhenjiang Zhou, Chaoke Wang, Huancai Lu, D. Michael McFarland	Design of granular chains to reduce the force transmitted to a fixed barrier	9:45am – 10:00am

DAY 2 – Wednesday, February 17, 2021		09:00am – 10:00am
Recent trends in nonlinear dynamics **ENERGY HARVESTING II**		Zoom Virtual Room
Chairs: Simon Neild, Daniele Zulli		
Kaiyuan Zhao, Qichang Zhang	Galloping piezoelectric energy harvester for low wind speed	09:00am – 09:15am
Mohammad Reyaz Ahmad Vali, Shaikh Faruque Ali	Harvesting energy from 2D-array of harvesters	09:15am – 09:30am
Santhosh B, I R Praveen Krishna	Generalized energy balanced method for a combined nonlinear vibration absorber energy harvester with nonlinear energy sink	09:30am – 09:45am
Krzysztof Kecik, Andrzej Mitura	Effect of Linear and Non-linear Electromechanical Coupling in Magnetic Levitation Energy Harvester	09:45am – 10:00am

DAY 2 – Wednesday, February 17, 2021
10:30am – 12:00pm CET (Central European Time)

DAY 2 – Wednesday, February 17, 2021		10:30am – 11:45am
Concepts and methods in nonlinear dynamics **ANALYTICAL TECHNIQUES II**		Zoom Virtual Room
Chairs: Stefano Lenci, Tieding Guo		
Zheng Fei, Xu Jie, Yuan Xuegang	Quantitative and qualitative analysis of a class of general Duffing systems	10:30am – 10:45am
Bo-Wei Qin, Kwok-Wai Chung, Antonio Algaba, Alejandro J. Rodríguez-Luis	Estimating generic canard explosions via efficient symbolic computation	10:45am – 11:00am
Bin Tang, Weilei Wu	An approximate approach for solving the steady-state response of a two-stage nonlinear vibration isolation system	11:00am – 11:15am
Aalokeparno Dhar, I R Praveen Krishna	Semi-analytical approaches for solving Duffing oscillator with multi-frequency excitation	11:15am – 11:30am
Sandra Carillo, Mariagrazia Naso, Elena Vuk, **Federico Zullo**	Non rectification of heat in graded Si-Ge alloys	11:30am – 11:45am

DAY 2 – Wednesday, February 17, 2021		10:30am – 12:00pm
Concepts and methods in nonlinear dynamics **CHAOTIC SYSTEMS AND UNCERTAINTY I**		Zoom Virtual Room
Chairs: Luigi Fortuna, Guilherme R. Franzini		
Zhao Chaofeng, Ren Hai-Peng	Weakness analyzing and performance improvement for image encryption using chaos crossing cylinder	10:30am – 10:45am
Qi Liu, Yong Xu	Fixed-interval smoothing of an aeroelastic airfoil model in incompressible flow	10:45am – 11:00am
Xiaoliang Gan, Haoyu Wang, Ruoshi Yuan, Ping Ao	The change of phase space volume is given by potential function of a non-equilibrium dynamical system	11:00am – 11:15am
Arvind Raj, Sirshendu Mondal, **Venkatramani Jagadish**	Investigations into stochastic nonlinear aeroelastic responses using recurrence networks	11:15am – 11:30am
Dionysios Sourailidis, Christos Volos, Lazaros Moysis, Ioannis Stouboulos	Nonlinear phenomena and chaos in a tumor growth model	11:30am – 11:45am
Wenzheng Zhang, Zhentao Zhao, Datian Niu	Nonlinear dynamics of hyperelastic cylindrical membranes composed of incompressible Ogden materials	11:45am – 12:00pm

DAY 2 – Wednesday, February 17, 2021		10:30am – 11:30am
Concepts and methods in nonlinear dynamics **COMPUTATIONAL NONLINEAR DYNAMICS II**		Zoom Virtual Room
Chairs: Liqun Chen, Sotrios Natsiavas		
Sotirios Natsiavas, **Panagiotis Passas**, Elias Paraskevopoulos	A novel time-stepping method for multibody systems with frictional impacts	10:30am – 10:45am
Roberto Alcorta, Benoit Prabel, Sebastien Baguet	DYNC: a Cast3M module for the bifurcation analysis of nonlinear mechanical vibrations	10:45am – 11:00am
Jiarui Yu, Baozeng Yue, Bole Ma	Isogeometric analysis for large-amplitude sloshing	11:00am – 11:15am
Daniela Addessi, Paolo Di Re, **Cristina Gatta**, Mariacarla Nocera	Two-scale curved beam model for dynamic analysis of masonry arches	11:15am – 11:30am

DAY 2 – Wednesday, February 17, 2021		10:30am – 12:00pm
Nonlinear dynamics and control **NONLINEAR VIBRATION CONTROL I**		Zoom Virtual Room
Chairs: Ju H. Park, Maurizio De Angelis		
Joseph Chang Lun Chan, Tae H. Lee, Chee Pin Tan, Hieu Trinh, Ju H. Park	A nonlinear observer for robust fault reconstruction in one-sided Lipschitz and quadratically inner-bounded nonlinear descriptor systems	10:30am – 10:45am
Stefano Pagliaro, Angelo Di Egidio	Dynamic performances of a 2 dof system coupled with rigid block and inerters	10:45am – 11:00am
Muqing Niu, Li-Qun Chen	Nonlinear vibration isolation via compliant mechanisms and wire ropes	11:00am – 11:15am
Youssef Fahmy, Ayman El-Badawy	Fuzzy model predictive pitch control of flexible wind turbine blade	11:15am – 11:30am
Jian Peng, Junhui Tong, Lianhua Wang, Hongxin Sun	Time delay-based mitigation design and nonlinear resonance of large amplitude vibration of the cable-stayed beam	11:30am – 11:45am
Ge Yan, Sen Wang, Wen-Ming Zhang	Large stroke quasi-zero stiffness vibration isolator by exploring geometric nonlinearity of r-shaped structure	11:45am – 12:00pm

DAY 2 – Wednesday, February 17, 2021		10:30am – 11:45am
Nonlinear dynamics and control **CONTROL OF NONLINEAR SYSTEMS I**		Zoom Virtual Room
Chairs: Gabor Stepan, Arturo Buscarino		
Alexander Alyukov, Michael Leamy	Arresting motion in nonlinear systems using two-scale command shaping	10:30am – 10:45am
Yinnan Luo, Ulrich Johannes Römer, Lena Zentner, Alexander Fidlin	Improving energy efficiency of a bipedal walker with optimized nonlinear elastic coupling	10:45am – 11:00am
Bence Szaksz, Gabor Stepan	Bifurcations in delayed collocated position control	11:00am – 11:15am
Ashwad Raaj, Venkatramani Jagadish, Sirshendu Mondal	Investigating amplitude death as a possible flutter suppression mechanism in a pitch-plunge aeroelastic system	11:15am – 11:30am
De-Li Xuan, Ze Tang, Ju H. Park	Stabilizing-delay-based impulsive control for cluster synchronization of nonlinearly coupled Lur'e networks	11:30am – 11:45am

DAY 2 – Wednesday, February 17, 2021		10:30am – 12:00pm
Special Session **IN MEMORY OF PROF. L. I. MANEVITCH**		Zoom Virtual Room
Chairs: Yuri Mikhlin, Francesco Pellicano		
Yuri Mikhlin, Gayane Rudnyeva	Stability of similar nonlinear normal modes under stochastic excitation	10:30am – 10:45am
Shagen Shaginyan, **Margarita Kovaleva**, Leonid Manevitch	Pendulum under bi-harmonic excitation	10:45am – 11:00am
Oleg Gendelman, Tal Ezra, Alexander Fidlin	Escape of excited conservative 2DOF system from potential well	11:00am – 11:15am
Giovanni Iarriccio, **Francesco Pellicano**	Nonlinear dynamics of spherical caps	11:15am – 11:30am
Yuri Mikhlin, Natalia Goloskubova	Analysis of the steady states stability using the Ince algebraization	11:30am – 11:45am
Yuriy A. Kosevich	Analytical model of strongly localized wrinkling modes of mono- and few-layer graphene sheets in or on a compliant strained matrix	11:45am – 12:00pm

DAY 2 – Wednesday, February 17, 2021
12:15pm – 1:15pm CET (Central European Time)

DAY 2 – Wednesday, February 17, 2021		12:15pm – 1:15pm
Concepts and methods in nonlinear dynamics **REDUCED-ORDER MODELS I**		Zoom Virtual Room
Chairs: Cyril Touzé, Guilherme Franzini		
Konstantinos Vlachas, Eleni Chatzi	Parametric model order reduction for localized nonlinear feature inclusion	12:15pm – 12:30pm
Marco Pizzoli, Francesco Saltari, Franco Mastroddi	Nonlinear reduced order model for vertical sloshing by employing neural networks	12:30pm – 12:45pm
Mattia Cenedese, Andrea Massocco, George Haller	Reduced-order modeling for wakes around bluff bodies using spectral submanifolds	12:45pm – 1:00pm
Tieding Guo	A few thoughts on corrected perturbation analysis and reduced-order modelling	1:00pm – 1:15pm

DAY 2 – Wednesday, February 17, 2021		12:15pm – 1:00pm
Nonlinear dynamics of mechanical and structural systems **EXPERIMENTAL DYNAMICS I**		Zoom Virtual Room
Chairs: Mohammad Younis, Farbod Alijani		
Hasti Hayati, David Eager, Sebastian Oberst	Recurrence plot quantification analysis of greyhound galloping gait	12:15pm – 12:30pm
Giuseppe Avon, Luigi Fortuna, Arturo Buscarino	Experimental Characterization of Nonlinear Pilot Induced Oscillations using a Flight Simulator	12:30pm – 12:45pm
Maksymilian Bednarek, Donat Lewandowski, Jan Awrejcewicz	Determining magnetic and electromagnetic springs forces and their usage in damping vibrations	12:45pm – 1:00pm

DAY 2 – Wednesday, February 17, 2021		12:15pm – 1:15pm
Nonlinear dynamics and control **SENSORS AND ACTUATORS II**		Zoom Virtual Room
Chairs: Hiroshi Yabuno, Dumitru Caruntu		
Masamichi Uemori, Hiroshi Yabuno, Yasuyuki Yamamoto, Sohei Matsumoto	Measurement of minute stiffness change by virtual cantilever virtually coupled with real cantilever	12:15pm – 12:30pm
Hamidreza Esmaeili, **Hadi Arvin**, Walter Lacarbonara	Nonlinear forced vibration analysis of cantilever CNT microbeams bonded with piezo-layers with an attached mass mounted on a shuttle mass	12:30pm – 12:45pm
Shinpachiro Urasaki, Yudai Tanaka, Hiroshi Yabuno	Proposition of nonlinear sensor-less amplitude control of cantilever for micro-viscometer	12:45pm – 1:00pm
Andrea Salvatore, Walter Lacarbonara	On the shock performance of a tri-stable vibration isolator	1:00pm – 1:15pm

DAY 2– Wednesday, February 17, 2021		12:15pm – 1:15pm
Recent trends in nonlinear dynamics **BIOCAPSULE ROBOTS I**		Zoom Virtual Room
Chairs: Yang Liu, Felix Chernousko		
Felix Chernousko	Change of the body orientation by means of internal masses	12:15pm – 12:30pm
Bingyong Guo, Yang Liu	Vibro-impact dynamics of a universal experimental rig with two-sided constraints	12:30pm – 12:45pm
Maolin Liao, Jiajia Zhang, Yang Liu, JiaPeng Zhu, Ziqiang Zhu	Variable speed optimization of a vibro-impact capsule system in both the forward and backward directions	12:45pm – 1:00pm
Van-Du Nguyen	Vibro-impact capsule under different conditions of friction	1:00pm – 1:15pm

DAY 2 – Wednesday, February 17, 2021		12:15pm – 1:15pm
Recent trends in nonlinear dynamics **ENERGY HARVESTING III**		Zoom Virtual Room
Chairs: Americo Cunha, Abdessattar Abdelkefi		
Pradeep Malaji, Tanmoy Mukhopadhyay	Nonlinear resonator based metastructures for vibration attenuation and energy harvesting	12:15pm – 12:30pm
Wei Wang, Yuling Song	Nonlinear dynamics analysis of electric energy regeneration device based on vibration energy recovery	12:30pm – 12:45pm
Jing Li, Luo Lei, Dong Guan, Hui Shen, Junjie Gong	Dynamic modeling for a mechatronic energy harvesting shock absorbers	12:45pm – 1:00pm
Ning Yu, Chuanyu Wu, Gaohong Yu, Bo Yan	Bistable electromagnetic energy harvesting enhanced with a resonant circuit	1:00pm – 1:15pm

DAY 2 – Wednesday, February 17, 2021
3:30pm – 5:00pm CET (Central European Time)

DAY 2 – Wednesday, February 17, 2021		3:30pm – 5:00pm
Concepts and methods in nonlinear dynamics **BIFURCATION AND DYNAMIC INSTABILITY II**		Zoom Virtual Room
Chairs: Paulo Gonçalves, Houjun Kang		
Julio C. Coaquira, Daniel C.T. Cardoso, **Paulo Gonçalves**, Diego Orlando	Parametric instability and bifurcation of thin-walled axially compressed long FRP columns	3:30pm – 3:45pm
Guilherme Franzini, Carlos Mazzilli	Numerical studies on the nonlinear dynamics of the Ziegler column under pulsating follower force	3:45pm – 4:00pm
Brian Saunders, Rui Vasconcellos, Robert Kuether, Abdessattar Abdelkefi	Bifurcation analysis of a Duffing oscillator with a multi-segmented freeplay nonlinearity	4:00pm – 4:15pm
Antonio Algaba, **Cinta Domínguez Moreno**, Manuel Merino, Alejandro J. Rodríguez-Luis	A degenerate double-zero bifurcation in a normal form of Lorenz equations	4:15pm – 4:30pm
Timothy Alvis, Gregory Taylor, Abdessattar Abdelkefi	Insights on the impacts of multi-segmented motion limiting constraints on the nonlinear performance and stability of pipeline conveying fluid.	4:30pm – 4:45pm
Enrique Ponce, Emilio Freire, Manuel Ordoñez	Stability boundaries for generic two-step Hill's equations	4:45pm – 5:00pm

DAY 2 – Wednesday, February 17, 2021		3:30pm – 5:00pm
Concepts and methods in nonlinear dynamics **COMPUTATIONAL NONLINEAR DYNAMICS III**		Zoom Virtual Room
Chairs: Harry Dankowicz, Giovanni Formica		
Christopher Marry, Harry Dankowicz, Girish Krishnan	Continuation-based design of self-contacting soft robotic manipulators	3:30pm – 3:45pm
Nikolas Aksamit, George Haller	The organization of boundary layer turbulence with objective momentum transport barriers	3:45pm – 4:00pm
Suguang Dou	An improved tensorial implementation of the incremental harmonic balance method for frequency-domain stability analysis	4:00pm – 4:15pm
Subramanian Ramakrishnan, Heather Harma	Morphological computation using a soft robot: a nonlinear oscillator network model	4:15pm – 4:30pm
Giovanni Formica, Walter Lacarbonara, Franco Milicchio	On the computational efficiency of pseudo-arclength path-following schemes for multi-DOFs dynamical systems	4:30pm – 4:45pm
Piyush Grover, Mandy Huo, Kaivalya Bakshi	Inverse design of collective dynamics in large-scale multi-agent systems via bifurcation analysis of mean field games	4:45pm – 5:00pm

DAY 2 – Wednesday, February 17, 2021		3:30pm – 4:45pm
Concepts and methods in nonlinear dynamics **ANALYTICAL TECHNIQUES III**		Zoom Virtual Room
Chairs: Claude-Henri Lamarque, Brian Feeny		
Emmanuel Gourdon, Alireza Ture Savadkoohi, Claude-Henri Lamarque	Analytical approximation of forced oscillations of nonlinear Helmholtz resonator by homotopy analysis method	3:30pm – 3:45pm
Fatemeh Afzali, Ehsan Kharazmi, Brian Feeny	Resonances of van der Pol equation with parametric damping	3:45pm – 4:00pm
Ashu Sharma	On generalization of resonances in parametrically excited systems	4:00pm – 4:15pm
Ryan Quintana, **Samantha Ceballes**, Abdessattar Abdelkefi	Vibrations and buckling characteristics of a carbon nanotube embedded in a viscoelastic foundation	4:15pm – 4:30pm
Laura Menini, **Corrado Possieri**, Antonio Tornambè	An algorithm to determine the exact solution to polynomial semi-definite problems: application to structural optimization	4:30pm – 4:45pm

DAY 2 – Wednesday, February 17, 2021		3:30pm – 5:00pm
Nonlinear dynamics of mechanical and structural systems **MECHANICAL SYSTEMS AND STRUCTURES II**		Zoom Virtual Room
Chairs: Simon Neild, Angelo M. Tusset		
Jose M. Balthazar, Rodrigo T. Rocha, Angelo M. Tusset, Mauricio Ribeiro, Jorge L.P. Felix (*Minikeynote*)	Full interaction of a vibrating elastic structure with an energy source of limited power supply	3:30pm –4:00pm
Alois Steindl	Slow-fast dynamics of an oversteer vehicle	4:00pm – 4:15pm
Maor Farid	Real-Time Data-Driven method for Fatigue Failure Prediction Under Stochastic Loading	4:15pm – 4:30pm
Jacob Barba, Adam Takeshita, Kaleb Jankowski, Hunter Sedillo, Ethan Billingsley, Adam Bouma, Abdessattar Abdelkefi	Finite element modeling and experimental testing of cantilever beams with bolted joint connections	4:30pm – 4:45pm
Dongxiao Hong, Evangelia Nicolaidou, Thomas Hill, Simon Neild	Identifying phase-varying periodic behaviours in a conservative cable model	4:45pm –5:00pm

DAY 2 – Wednesday, February 17, 2021		3:30pm – 5:00pm
Nonlinear dynamics and control **NONLINEAR VIBRATION CONTROL II**		Zoom Virtual Room
Chairs: Sotirios Natsiavas, Anil Bajaj		
Lance Larsen, **Anil Bajaj**	Nonlinear dynamics of a pinned-pinned elastic beam with multiple autoparametric vibration absorbers	3:30pm – 3:45pm
Chiara Masnata, Alberto Di Matteo, Christoph Adam, Antonina Pirrotta	Tuned liquid column damper inerter (TLCDI) for seismic vibration control of fixed-base and base-isolated structures	3:45pm – 4:00pm
Ashu Sharma, **Jing Zhao**	Control of a chaotic Duffing oscillator to time-varying motions	4:00pm – 4:15pm
Christian Silva, James Gibert, Amin Maghareh, Shirley Dyke	Experimental study of a nonlinear energy sink based on a cantilever beam under special boundary conditions	4:15pm – 4:30pm
Raphael S. Silva, Thiago Ritto, Marcelo A. Savi	Attenuation of drill-string torsional oscillations using shape memory alloys	4:30pm – 4:45pm
Myrella Cabral, Flávio Marques, António Ferreira	Nonlinear flutter suppression of composite panels with nonlinear energy sinks	4:45pm – 5:00pm

DAY 2 – Wednesday, February 17, 2021		3:30pm – 4:45pm
Nonlinear dynamics and control **CONTROL OF NONLINEAR SYSTEMS II**		Zoom Virtual Room
Chairs: Jan Awrejcewicz, Yang Liu		
Eduardo A. Petrocino, Jose M. Balthazar, Angelo M. Tusset, Mauricio Ribeiro, Paulo J. Gonçalves, Marcos Silveira, Willian Minnemann Kuhnert, Jan Awrejcewicz, Grzegorz Kudra	Vibration control of a cantilever beam coupled to a non-ideal power source by coil impedance matching	3:30pm – 3:45pm
Heather Harma, **Subramanian Ramakrishnan**	Dynamics and control of a planar soft robot: A nonlinear oscillator network model	3:45pm – 4:00pm
Erick Espinoza, Jonatan Pena Ramirez	Control and synchronization of underactuated inverted pendulums	4:00pm – 4:15pm
Althea Rustico, Massimiliano Formenti, **Nicholas Fantuzzi**, Antonio Ferreira	Dynamic actuation model for vibration reduction in offshore cranes	4:15pm – 4:30pm
Iwona Adamiec-Wójcik, Lucyna Brzozowska, Stanisław Wojciech	Influence of sea currents on the strategy of riser re-entry	4:30pm – 4:45pm

DAY 2 – Wednesday, February 17, 2021		3:30pm – 4:30pm
Recent trends in nonlinear dynamics **ENERGY HARVESTING IV**		Zoom Virtual Room
Chairs: Daniil Yurchenko, Antoine Blanchard		
Mohammad Khasawneh, Mohammed Daqaq	An Internally-Resonant Tunable Generator for Wave Energy Harvesting	3:30pm – 3:45pm
Manuel Serrano, Kevin Larkin, Sergei Tretiak, Abdessattar Abdelkefi	Nonlinear investigation on the dynamics and effectiveness of multifunctional energy harvesting gyroscopes	3:45pm – 4:00pm
X.Q. Wang, Yabin Liao, Marc P. Mignolet	Nonlinear reduced order modelling of a buckled piezoelectric beam for energy harvesting	4:00pm – 4:15pm
Tyler Alvis, Abdessattar Abdelkefi	Investigations on stoppers effects on energy harvesting absorbers when controlling vortex-induced vibrations of cylindrical structures	4:15pm – 4:30pm

DAY 2 – Wednesday, February 17, 2021
5:15pm – 6:30pm CET (Central European Time)

DAY 2 – Wednesday, February 17, 2021		5:15pm – 6:15pm
Concepts and methods in nonlinear dynamics **NONSMOOTH SYSTEMS III**		Zoom Virtual Room
Chairs: Ivana Kovacic, Valeria Settimi		
Csaba Budai, Mate Antali, Gabor Stepan	Analysis of a friction oscillator with two frictional contacts	5:15pm – 5:30pm
Brian Saunders, Rui Vasconcellos, Robert Kuether, Abdessattar Abdelkefi	Insights on the dynamics of piecewise-smooth oscillators with continuous representations	5:30pm – 5:45pm
Makayla Ley, Mason Curtin, Megan Trujillo, Brian Saunders, Glen Throneberry, Abdessattar Abdelkefi	Influence of stopper hardness on the nonlinear dynamics of beam and plate systems	5:45pm – 6:00pm
Dzanko Hajradinovic, Miodrag Zukovic, Ivana Kovacic	Dynamical analysis of vibro-impact system with non-ideal excitation	6:00pm – 6:15pm

DAY 2 – Wednesday, February 17, 2021		5:15pm – 6:15pm
Concepts and methods in nonlinear dynamics **NONLINEAR WAVES I**		Zoom Virtual Room
Chairs: Muahmmad Hajj, Patrizia Trovalusci		
Vamsi Meesala, Muhammad R. Hajj, Shima Shahab	Investigation on the shock formation in acoustic energy transfer systems	5:15pm – 5:30pm
Stefano Lenci, Francesco Clementi	Wave motion in a beam on a tensionless foundation	5:30pm – 5:45pm
Annamaria Pau, Patrizia Trovalusci, Marco Pingaro	A multifield continuum model for the description of wave propagation in microcracked composite-material plate waveguides	5:45pm – 6:00pm
Nebojsa Dedovic	The wave front tracking method and Delta shocks	6:00pm – 6:15pm

DAY 2 – Wednesday, February 17, 2021		5:15pm – 6:30pm
Nonlinear dynamics of mechanical and structural systems **MECHANICAL SYSTEMS AND STRUCTURES III**		Zoom Virtual Room
Chairs: Americo Cunha Jr, Paulo Gonçalves		
Sotirios Natsiavas, **Evangelos Koutras**, Elias Paraskevopoulos	Co-simulation in mechanical systems with nonlinear components	5:15pm – 5:30pm
Jonathas Pereira, Renata Soares, **Frederico Silva**, Paulo Gonçalves	Influence of circumferential discontinuity of an elastic foundation on the nonlinear dynamics of cylindrical shells with functionally graded material	5:30pm – 5:45pm
Cesar Augusto Fonseca, Guilherme Rodrigues, Geraldo Rebouças, Marcelo Pereira, **Americo Cunha Jr**	A mechanical model for the non-linear dynamics of a cable-car system	5:45pm – 6:00pm
Marek Metelski, Iwona Adamiec-Wójcik, Łukasz Drąg, Stanisław Wojciech	Application of RFEM to modeling dynamics of lattice boom offshore cranes	6:00pm – 6:15pm
Walter Wedig	Multiple Sommerfeld effects in nonlinear vehicle road dynamics	6:15pm – 6:30pm

DAY 2 – Wednesday, February 17, 2021		5:15pm – 6:30pm
Nonlinear dynamics of mechanical and structural systems **MULTIFUNCTIONAL STRUCTURES I**		Zoom Virtual Room
Chairs: Matthew Cartmell, Fernando Fraternali		
Olga Ganilova, **Matthew Cartmell**, Andrew Kiley	The development of a coupled dynamic model for thermoelastically loaded aluminium composite sandwich plates for satellite applications	5:15pm – 5:30pm
Giulia Lanzara	Dynamic morphing of a rolling material	5:30pm – 5:45pm
Mason Curtin, Makayla Ley, Megan Trujillo, Brian Saunders, Glen Throneberry, Abdessattar Abdelkefi	Nonlinear orthotropic modeling and analysis of additively manufactured systems	5:45pm – 6:00pm
Giulia Lanzara	Characterization of morphing nanocomposites under a quasi-static and impulsive magnetic field	6:00pm – 6:15pm
Sinem Mizrak, Ender Cigeroglu	Nonlinear natural frequencies of functionally graded axisymmetric annular microplates based on the modified couple stress theory	6:15pm – 6:30pm

DAY 2 – Wednesday, February 17, 2021		5:15pm – 6:30pm
Recent trends in nonlinear dynamics **MEMS/NEMS II**		Zoom Virtual Room
Chairs: Eihab Abdel-Rahman, Laura Ruzziconi		
Dumitru Caruntu, Ezequiel Juarez	Amplitude-voltage response of parametric resonance electrostatically actuated DWCNT resonators	5:15pm – 5:30pm
Kaio Benedetti, Paulo Gonçalves	Nonlinear response of an imperfect microcantilever static and dynamic actuated considering noise	5:30pm – 5:45pm
Amal Hajjaj, Jonathan Ortiz, Abdessattar Abdelkefi	Size dependent and material structure coupling effects on the dynamics of nanocrystalline arc resonators	5:45pm – 6:00pm
Navid Heidari, Ayman Alneamy, Walter Lacarbonara, Eihab Abdel-Rahman	Single Input Single Output MEMS gas sensor	6:00pm – 6:15pm
Carlo Famoso, Luigi Fortuna, Arturo Buscarino	Nonlinear modeling for thermal behavior on power integrated circuits	6:15pm – 6:30pm

DAY 2 – Wednesday, February 17, 2021		5:15pm – 6:15pm
Special Session **COMPLEX DYNAMICS OF COVID-19: MODELING, PREDICTION AND CONTROL II**		Zoom Virtual Room
Chairs: YangQuan Chen, Bala Balachandran		
Yasser Aboelkassem, Haithem Taha	A cooperative epidemiological model of infectious disease dynamics: a COVID-19 case study	5:15pm – 5:30pm
Carla Pinto, Jose Machado	Adapted SIQR model for the dynamics of SARS-CoV-2 infection	5:30pm – 5:45pm
Khyar Omar, Allali Karam	Dynamic analysis of a three-strain COVID-19 SEIR epidemic model with general incidence rates	5:45pm – 6:00pm
Ivan Gandzha, Oleksandr Kliushnichenko, Sergey Lukyanets	The effect of multiple characteristic time scales on the nonlinear dynamics of epidemics	6:00pm – 6:15pm

DAY 3 – Thursday, February 18, 2021
9:00am – 10:15am CET (Central European Time)

DAY 3 – Thursday, February 18, 2021		9:00am – 10:00am
Concepts and methods in nonlinear dynamics **NONSMOOTH SYSTEMS IV**		Zoom Virtual Room
Chairs: Pierangelo Masarati, David Roze		
Huimin Zhang, Runsen Zhang, Andrea Zanoni, Pierangelo Masarati	A generalized solution scheme using an implicit time integrator for piecewise linear and nonlinear systems	9:00am – 9:15am
Antoine Falaize, **David Roze**	A generic passive-guaranteed structure for elastoplastic friction models	9:15am – 9:30am
Wei Dai, Jian Yang	Vibration analysis of a multi-DOF impact oscillator with multiple linear constraints	9:30am – 9:45am
Dali Lv, Qichang Zhang	Design of NARX model for dry friction system of the three-piece bogie	9:45am – 10:00am

DAY 3 – Thursday, February 18, 2021		9:00am – 10:00am
Concepts and methods in nonlinear dynamics **COMPUTATIONAL NONLINEAR DYNAMICS IV**		Zoom Virtual Room
Chairs: Franco Milicchio, Mate Antali		
Carlos Argáez, Peter Giesl, Sigurdur Freyr Hafstein	Statistical analyses of an iterative algorithm class for dynamical systems	9:00am – 9:15am
Bo-Wei Qin, Kwok-Wai Chung, Antonio Algaba, **Alejandro J. Rodríguez-Luis**	High-order approximation of global connections in planar system with the nonlinear time transformation method	9:15am – 9:30am
Bao Rong, Xiaoting Rui, Guoping Wang, Ling Tao	Dynamics analysis of flexible beam systems with stochastic uncertainty and thermal coupling effect	9:30am – 9:45am
Zigang Li, Jun Jiang, Ling Hong, Jian-Qiao Sun	Data-driven generalized cell mapping method for global dynamical analysis	9:45am – 10:00am

DAY 3 – Thursday, February 18, 2021		9:00am – 10:00am
Concepts and methods in nonlinear dynamics **NONLINEAR WAVES II**		Zoom Virtual Room
Chairs: Sandra Carillo, Denis Bonheure		
Peng Ningning, Qing Pan, Chow K. W.	Computational studies on coupled triads in the dynamics of oceanic internal waves under the effects of density stratification	9:00am – 9:15am
Qing Pan, Ning Ning Peng, Chow K. W.	Analytical modelling of the dynamics of coupled triads in stratified fluids: Applications to oceanic waves	9:15am – 9:30am
Ran Wang, Hu Ding, Yuan XueGang, Na Lv, Li-Qun Chen	Nonlinear singular travelling waves in a compressible thermo-hyperelastic cylindrical shell	9:30am – 9:45am
Shibam Manna, A. K. Dhar	Effect of vorticity on peregrine breather for interfacial waves of finite amplitude	9:45am – 10:00am

DAY 3 – Thursday, February 18, 2021		9:00am – 10:15am
Concepts and methods in nonlinear dynamics **MULTI BODY SYSTEMS**		Zoom Virtual Room
Chairs: Zdravko Terze, Dan Negrut		
Friedrich Pfeiffer	On the mobility of a robot-trajectory process	9:00am – 9:15am
Simone Benatti, Aaron Young, Asher Elmquist, Jay Taves, Radu Serban, Dario Mangoni, Dan Negrut, Alessandro Tasora	PyChrono and gym-chrono: a deep reinforcement learning framework leveraging multibody dynamics to control autonomous vehicles and robots.	9:15am – 9:30am
Zdravko Terze, **Viktor Pandža**, Dario Zlatar	Reduced coupled multibody fluid system dynamics in Lie group setting	9:30am – 9:45am
Alfonso García-Agúndez Blanco, Daniel Garca Vallejo, Emilio Freire	Linear stability analysis of a bicycle multibody model with toroidal wheels	9:45am – 10:00am
Paulo Flores	Dynamic behavior of mechanisms with planar and spatial clearance joints	10:00am – 10:15am

DAY 3 – Thursday, February 18, 2021		9:00am – 10:15am
Nonlinear dynamics and control **CONTROL OF NONLINEAR SYSTEMS III**		Zoom Virtual Room
Chairs: Anton Belyakov, Arnaldo Casalotti		
Arnaldo Casalotti, Francesco D'Annibale	Piezoelectric control of the Hopf bifurcation of the visco-elastic Beck beam	9:00am – 9:15am
Na Dong, Zhiqiang Wu, Yu Feng, Zhongke Gao, Celso Grebogi	Model-free adaptive control strategy for the temperature tracking control of Single-Effect LiBr/H2O absorption chiller	9:15am – 9:30am
Nikolay Bolotnik, Tatiana Figurina	Controllability of a two-body limbless crawler on an inclined rough plane	9:30am – 9:45am
Srimanta Lal De, Shaikh Faruque Ali	A study on control of chaotic system	9:45am – 10:00am
Andrei Bukh, Galina Strelkova, Vadim Anishchenko	Synchronization features of spiral and target wave structures	10:00am – 10:15am

DAY 3 – Thursday, February 18, 2021		9:00am – 10:15am
Special Session **COMPLEX DYNAMICS OF COVID-19: MODELING, PREDICTION AND CONTROL III**		Zoom Virtual Room
Chair: J. Tenreiro Machado, Walter Lacarbonara		
Xianbo Liu, Guang Meng, Bala Balachandran	Multi-phase dynamics of COVID-19 and data-driven forecasts	9:00am – 9:15am
Guojian Ren, Yongguang Yu, Xiangyun Meng	A stochastic heterogeneous node-based generalized SIR model in switching network for COVID-19	9:15am – 9:30am
Yamin Ding, Yanmei Kang	Dynamical analysis of a COVID-19 epidemic model with social confinement and acquired immunity loss	9:30am – 9:45am
Ms Nilam, Mrs Swati	Fractional order SIR epidemic model for COVID-19	9:45am – 10:00am
Rohith G, K. B. Devika	Dynamics and impact of quarantine compartments in the control of COVID-19 spread	10:00am – 10:15am

DAY 3 – Thursday, February 18, 2021
10:30am – 12:00pm CET (Central European Time)

DAY 3 – Thursday, February 18, 2021		10:30am – 12:00pm
Concepts and methods in nonlinear dynamics **CHAOTIC SYSTEMS AND UNCERTAINTY II**		Zoom Virtual Room
Chairs: Anton Krysko, Paul Meehan		
Paul Meehan	Investigation of chaotic instability in brake squeal	10:30am – 10:45am
Derek Cyrus Gomes, G. Ambika	Frequency locking, quasi-periodicity and chaos due to special relativistic effects	10:45am – 11:00am
Biswarup Bhattacharyya, Eric Jacquelin, Denis Brizard	A surrogate approach for stochastic modeling of a crash box under impact loading in the time domain	11:00am – 11:15am
Evgeniya Pankratova	Environmentally induced chaos and amplitude death in neuronal network activity	11:15am – 11:30am
Irina Papkova, Tatyana Tatyana, **Vadim Krysko**, Anton Krysko	Chaos type identification in the contact interaction of closed cylindrical nanoshells embedded one into another with a gap between them.	11:30am – 11:45am
Wei Li, Li Mengyang, Huang Dongmei, Yang Guidong, Natasa Trisovic	The statistical response of a three-dimensional REE model with random noise	11:45am – 12:00pm

DAY 3 – Thursday, February 18, 2021		10:30am – 12:00pm
Concepts and methods in nonlinear dynamics **BIFURCATION AND DYNAMIC INSTABILITY III**		Zoom Virtual Room
Chairs: Katica Hedrih, Carla M.A. Pinto		
Katica Hedrih (Stevanović)	Bifurcation and triggers of coupled singularities in the dynamics of generalized rolling pendulums	10:30am – 10:45am
Tamas Kalmar-Nagy, Janos Lelkes	Analysis of periodic and quasi-periodic orbits of a hysteretic oscillator	10:45am – 11:00am
K Prabith, I R Praveen Krishna	Bifurcation studies of a nonlinear mechanical system subjected to multi-frequency-quasi-periodic excitations	11:00am – 11:15am
Xiaoshen Zhang, Zhe Sun, Lei Zhao, Xunshi Yan, Jingjing Zhao, Zhengang Shi	Analysis of nonlinear behaviors in AMB-rotor system	11:15am – 11:30am
Essia Added, Hassane Gritli	Birth of the Neimark-Sacker bifurcation for the passive compass-gait walker	11:30am – 11:45am
Xi Wang, Jun Jiang, Ling Hong	Generalized Cell Mappings with Subdivision and Interpolation (GCM-SI) for global attractors in high dimensions of nonlinear systems	11:45am – 12:00pm

DAY 3 – Thursday, February 18, 2021		10:30am – 12:00pm
Nonlinear dynamics of mechanical and structural systems **SYSTEM IDENTIFICATION AND SHM III**		Zoom Virtual Room
Chairs: Mohammad Younis, Dario De Domenico		
Sandor Beregi, David Barton, Djamel Rezgui, Simon Neild	Parameter identification in a physics-based model of aeroelastic flutter augmented with machine learnable structures	10:30am – 10:45am
Qinghua Liu, Fangyuan Hu, Junyi Cao, Xingjian Jing	Nonlinear restoring force subspace identification of negative stiffness nonlinear oscillators	10:45am – 11:00am
Manuel Pinto, Nicola Roveri, Gianluca Pepe, Antonio Carcaterra	A new approach for structural health monitoring: damage detection on large structures through a swarm of moving sensors	11:00am – 11:15am
Marzieh Ghani, Afshin Banazadeh	Accurate model identification of quadcopters with moments of inertia uncertainty and time delay	11:15am – 11:30am
Rui Zhu, Stefano Marchesiello, Dario Anastasio, Dong Jiang, Qingguo Fei	Identification of nonlinear damping using nonlinear subspace method	11:30am – 11:45am
Maicol Laurenza, Gianluca Pepe, Antonio Carcaterra	Identification of robot quadrupeds' gait by genetic algorithm	11:45am – 12:00pm

DAY 3 – Thursday, February 18, 2021		10:30am – 12:00pm
Nonlinear dynamics of mechanical and structural systems **MULTIFUNCTIONAL STRUCTURES II**		Zoom Virtual Room
Chairs: Francesco Pellicano, Yan Qing Wang		
MeiWen Teng, Yan Qing Wang (*Minikeynote*)	Nonlinear forced vibration of metal foam rectangular plates reinforced with graphene platelets	10:30am – 11:00am
Giulia Lanzara, Antonio Loisi, Federico Fabriani, Edoardo Bemporad	Motion and interaction of magnetic particles for advanced materials	11:00am – 11:15am
Sawan Kumar Guruva, Biagio Carboni, Walter Lacarbonara, Giovanni Formica, Federico Fabriani, Giulia Lanzara, Beate Krause	Nonlinear damping characteristic of nanocomposite beams via dynamical analysis	11:15am – 11:30am
Aleksandra Gawlik, Andrzej Klepka, Vsevolod Vladimirov, Sergii Skurativskyi	Forced transversal vibrations of von Karman plates with distributed spring-masses	11:30am – 11:45am
Ma Wensai, Zhang Wei	Complex Dynamics of a Bistable Asymmetric Laminated Composite Square Panel	11:45am – 12:00pm

DAY 3 – Thursday, February 18, 2021 — 10:30am – 11:45am

Nonlinear dynamics of mechanical and structural systems

Zoom Virtual Room

ROTATING SYSTEMS II

Chairs: Stephanos Theodossiades, C. Nat Nataraj

Bo Zhang, Hu Ding, **Li-Qun Chen**	Internal resonances of a rotating pre-deformed blade under a harmonic gas pressure	10:30am – 10:45am
Eugen Kremer	Stochastic resonances and antiresonances in rotating mechanisms	10:45am – 11:00am
Shibo Zhao, Xingmin Ren, Kuan Lu, Yongfeng Yang	A Precise Balancing Technology of the Rotor System Based on Multi Modal Analysis	11:00am – 11:15am
Tariq Alzarooni, Mohammad Al-Shudeifat	Post-resonance backward whirl analysis of accelerating cracked overhung rotor system using fatigue crack model	11:15am – 11:30am
Jun Jiang	Self-excited Oscillations with Two different Mechanisms in A Piecewise Smooth nonlinear Rotor/Stator Rubbing System	11:30am – 11:45am

DAY 3 – Thursday, February 18, 2021 — 10:30am – 12:00pm

Nonlinear dynamics and control

Zoom Virtual Room

NONLINEAR VIBRATION CONTROL III

Chairs: Hiroshi Yabuno, Ugo Andreaus

Enora Denimal, Ludovic Renson, Loïc Salles	Topological optimisation of friction dampers for nonlinear resonance mitigation	10:30am – 10:45am
Noriyuki Tamaki, Hiroshi Yabuno	Nonlinear Stabilization of Hunting Motion of Railway Wheelset by Gyro-scopic Damper	10:45am – 11:00am
Giulia Stefani, Maurizio De Angelis, Ugo Andreaus	Preliminary experimental study on the influence of the gap in a vibro-impact system with two-sided constraints	11:00am – 11:15am
Zhuang Dong, Jian Yang, Dimitrios Chronopoulos	Suppression of vibration transmission between oscillators coupled with a nonlinear inerter-based joint	11:15am – 11:30am
Yiwei Zhao, **Yongqiang Liu**, Shaopu Yang	A New Semi-active Control Method of Yaw Damper in High-speed Railway Vehicle and its Experiment in Hardware-in-the-loop System	11:30am – 11:45am
Santhosh B, **Rony Philip**, Bipin Balaram	Dynamics and Performance Analysis of a Nonlinear Energy Sink with Geometric Nonlinear Damping	11:45am – 12:00pm

DAY 3 – Thursday, February 18, 2021		10:30am – 12:00pm
Recent trends in nonlinear dynamics **NONLINEAR PHENOMENA IN BIO- AND ECOSYSTEMS DYNAMICS**		Zoom Virtual Room
Chairs: Jose Machado, Jun Ma		
Swati Mishra, **Ranjit Kumar Upadhyay**	Modeling the fear induced spatiotemporal dynamics of three-species agroecosystems	10:30am – 10:45am
Manoj Kumar, Syed Abbas	Optimal control in a size structured population model with time dependent diffusion rate	10:45am – 11:00am
J. Leonel Rocha, Abdel-Kaddous Taha	Nonlinear dynamics and bifurcation analysis of homographic Ricker maps	11:00am – 11:15am
Lukasz Plociniczak	Relaxation-oscillations in a conceptual climate model	11:15am – 11:30am
Giuseppe Orlando	Simulating corporate dynamics via the Rulkov map	11:30am – 11:45am
Taqseer Khan, **Harindri Chaudhary**	Compound difference anti-synchronization in generalized lotka-volterra biological systems via active control method	11:45am – 12:00pm

DAY 3 – Thursday, February 18, 2021
12:15pm – 1:15pm CET (Central European Time)

DAY 3 – Thursday, February 18, 2021		12:15pm – 1:00pm
Concepts and methods in nonlinear dynamics **TRANSIENT DYNAMICS**		Zoom Virtual Room
Chairs: Oleg Gendelman, Emmanuel Gourdon		
Attila Genda, Alexander Fidlin, Oleg Gendelman	On the escape of a resonantly excited couple of particles from a potential well	12:15pm – 12:30pm
Zhifu Cao, Dong Jiang, Qingguo Fei, Rakesh K. Kapania, Hui Jin, Rui Zhu	Dynamic sensitivity analysis of transient responses for nonlinear structures	12:30pm – 12:45pm
Kevin Dekemele, Lennert De Knop, Patrick Van Torre, Mia Loccufier	Equivalence of grounded and non-grounded NES's tuning and performance in mitigating transient vibrations	12:45pm – 1:00pm

DAY 3 – Thursday, February 18, 2021		12:15pm – 1:15pm
Concepts and methods in nonlinear dynamics **ANALYTICAL TECHNIQUES IV**		Zoom Virtual Room
Chairs: David Wagg, Andrea Arena		
Meng-Hsuan Tien, Kiran D'Souza	Analysis of general piecewise-linear nonlinear systems using a hybrid analytical-numeric computational method	12:15pm – 12:30pm
Eric Howard	Nonlinear aspects of one-dimensional supersymmetry	12:30pm – 12:45pm
Pavel Udalov, Ivan Popov, Alexey Lukin	A study of the self-oscillating regime in the problem of an atomic force microscope in the contact mode	12:45pm – 1:00pm
Lavinia Birdac	Stability of equilibria in an infinite dimensional network of theta neurons	1:00pm – 1:15pm

DAY 3 – Thursday, February 18, 2021		12:15pm – 1:00pm
Nonlinear dynamics of mechanical and structural systems **MODAL INTERACTIONS AND ENERGY TRANSFER II**		Zoom Virtual Room
Chairs: Mohammad Younis, Houjun Kang		
Feras Alfosail, Mohammad Younis	Modal interactions of inclined marine riser under vortex induced vibrations	12:15pm – 12:30pm
Xiaoyang Su, Houjun Kang	Modelling and nonlinear dynamic analysis of a cable considering the vibration of a damper	12:30pm – 12:45pm
Aravindan Muralidharan, Shaikh Faruque Ali	Theoretical investigations on an internally resonant piezoelectric energy harvester	12:45pm – 1:00pm

DAY 3 – Thursday, February 18, 2021		12:15pm – 1:15pm
Recent trends in nonlinear dynamics **MEMS/NEMS III**		Zoom Virtual Room
Chairs: Farbod Alijani, Attilio Frangi		
Nir Dick, Slava Krylov	Analysis of pattern switching in an array of micro cantilevers under parametric electrostatic excitation	12:15pm – 12:30pm
Andrea Opreni, Attilio Frangi	Full-order frequency-domain simulations of nonlinear piezoelectric MEMS	12:30pm – 12:45pm
Vasilisa Igumnova, Lev Shtukin, Alexey Lukin, Ivan Popov	Model of a micromechanical accelerometer based on the phenomenon of modal localization	12:45pm – 1:00pm
Nadezhda Mozhgova, Alexey Lukin, Ivan Popov	Initially curved microbeam as sensitive element of resonant accelerometer	1:00pm – 1:15pm

DAY 3 – Thursday, February 18, 2021		12:15pm – 1:15pm
Recent trends in nonlinear dynamics **METAMATERIALS I**		Zoom Virtual Room
Chairs: Michael Leamy, Xiao-Dong Yang		
Ada Amendola, Marco Miniaci, Fernando Fraternali, **Luca Placidi**	Heuristic homogenization for bandgap bi-atomic mass-spring systems and application to tensegrity meta-structure	12:15pm – 12:30pm
Kyriakos Alexandros Chondrogiannis, Vasilis Dertimanis, Boris Jeremic, Eleni Chatzi	On the vibration attenuation properties of metamaterial design using negative stiffness elements	12:30pm – 12:45pm
Valeria Settimi, **Marco Lepidi**, Andrea Bacigalupo	Nonlinear wave propagation in metamaterial waveguides with inertia amplification	12:45pm – 1:00pm
Chang Quan Lai	Nonlinear mechanical response of rotation-dominated chiral lattices	1:00pm – 1:15pm

DAY 3 – Thursday, February 18, 2021
3:30pm – 5:00pm CET (Central European Time)

DAY 3 – Thursday, February 18, 2021		3:30pm – 5:00pm
Concepts and methods in nonlinear dynamics **CHAOTIC SYSTEMS AND UNCERTAINTY III**		Zoom Virtual Room
Chairs: Tieding Guo, Arturo Buscarino		
Carlo Famoso, Maide Bucolo, Arturo Buscarino, Luigi Fortuna, Salvina Gagliano	High frequency chaotic behavior in non-ideal operational amplifiers	3:30pm – 3:45pm
Luis Eduardo Reyes-López, José Murguía, H. González-Aguilar, H.C. Rosu	Scaling wavelet analysis of chaotic systems	3:45pm – 4:00pm
Marcelo Messias, Alisson de Carvalho Reinol	Dynamical analysis of a Memristor-Inductor-Capacitor (MLC) nonlinear circuit	4:00pm – 4:15pm
Luis Javier Ontanon-Garcia, Jonatan Pena Ramirez, Samuel Kolosovas-Machuca, Roberto Martinez-Montejano, Carlos Soubervielle-Montalvo	Displacement of equilibria and generation of n-double wing attractors in the piecewise linearized Lorenz system	4:15pm – 4:30pm
Carlo Famoso, Maide Bucolo, Arturo Buscarino, Luigi Fortuna, Salvina Gagliano	Multi-jump resonance in a class of oscillators with nonic polynomial nonlinearity	4:30pm – 4:45pm
Jonatan Pena Ramirez	Enhancing network synchronization in limit cycle oscillators via dynamic coupling	4:45pm – 5:00pm

DAY 3 – Thursday, February 18, 2021		3:30pm – 4:45pm
Concepts and methods in nonlinear dynamics **COMPUTATIONAL NONLINEAR DYNAMICS V**		Zoom Virtual Room
Chairs: Jan Awrejcewicz, Giovanni Formica		
Francesco Latini, Jacopo Brunetti, Walter D'Ambrogio, Annalisa Fregolent	Nonlinear dynamic substructuring with localized nonlinearities	3:30pm – 3:45pm
Suguang Dou	An improved formulation for structural optimization of nonlinear dynamic response	3:45pm – 4:00pm
Paolo Di Re, Daniela Addessi, Cristina Gatta	Enriched Vlasov beam model for nonlinear dynamic analysis of thin-walled structures	4:00pm – 4:15pm
Tetyana Shmatko, Lidiya Kurpa, Jan Awrejcewicz	Nonlinear vibration of functionally graded shallow shells resting on elastic foundations	4:15pm – 4:30pm
Carlos Argáez, Peter Giesl, Sigurdur Freyr Hafstein	WendlandXool: Simplified C++ code to compute Wendland functions	4:30pm – 4:45pm

DAY 3 – Thursday, February 18, 2021		3:30pm – 4:30pm
Concepts and methods in nonlinear dynamics **NONLINEAR WAVES III**		Zoom Virtual Room
Chairs: Sandra Carillo, Harold Blas		
Sandra Carillo, Cornelia Schiebold	Construction of soliton solutions of the matrix Korteweg-de Vries and modified Korteweg-de Vries equations	3:30pm – 3:45pm
Piotr Rozmej, Anna Karczewska	KdV, extended KdV, 5th-order KdV and Gardner equations generalized for uneven bottom versus corresponding Boussinesq's equations	3:45pm – 4:00pm
Ivan Gandzha, Yuri Sedletsky	A multi-time Hamiltonian approach to the derivation of a high-order nonlinear Schrodinger equation for the envelope of slowly modulated wave trains	4:00pm – 4:15pm
Harold Blas, Martin Cerna, Luis Fernando dos Santos	Modified non-linear Schrodinger models, CPT symmetry and anomalous charges	4:15pm – 4:30pm

DAY 3 – Thursday, February 18, 2021		3:30pm – 4:30pm
Nonlinear dynamics of mechanical and structural systems **EXPERIMENTAL DYNAMICS II**		Zoom Virtual Room
Chairs: Michael Leamy, Abdessattar Abdelkefi		
Lezheng Fang, Alireza Mojahed, Amir Darabi, Alexander Vakakis, Michael Leamy	Experimental non-reciprocity in a geometrically nonlinear system composed of elastically-coupled rotators	3:30pm – 3:45pm
Aarushi Bhargava, **Vamsi Meesala**, Muhammad R. Hajj, Shima Shahab	Experimental analysis of a high-intensity focused ultrasound power transfer system	3:45pm – 4:00pm
Hunter Sedillo, Abdessattar Abdelkefi, Kaleb Jankowski, Adam Takeshita, Adam Bouma, Jacob Barba	Numerical and experimental investigations on bolted connections of BARC structures	4:00pm – 4:15pm
Rafal Radecki, Michael Leamy, Pawel Packo, Andrzej Klepka	Investigation of shear wave interaction at a frictional hysteretic interface	4:15pm – 4:30pm

DAY 3 – Thursday, February 18, 2021		3:30pm – 5:00pm
Nonlinear dynamics and control **NONLINEAR VIBRATION CONTROL IV**		Zoom Virtual Room
Chairs: Jose M. Balthazar, Antonina Pirrotta		
Austin Morock, Andrea Arena, Mary Lanzerotti, Jacob Capps, Walter Lacarbonara, Thomas Aldhizer	Variable length sling load hoisting control method	3:30pm – 3:45pm
Eduardo Ribeiro, Carlos Mazzilli, Breno Mendes	Stabilisation of unstable responses on a heavy-chain model by means of parametric excitation	3:45pm – 4:00pm
Anderson Langone Silva, Marcus Varanis, Eduardo M. O. Lopes, Jose M. Balthazar, Carlos Alberto Bavastri	Suppression of Sommerfed effect on a cantilever beam through a viscoelastic dynamic neutralizer	4:00pm – 4:15pm
Hélio Cruz Neto, Marcelo Trindade	A novel methodology for controlling stick-slip vibrations in drill-strings	4:15pm – 4:30pm
Elena Adomaitienė, Steponas Ašmontas, Skaidra Bumelienė, Arūnas Tamaševičius	Pinning control of an array of the globally coupled FitzHugh–Nagumo oscillators via a single damaged unit	4:30pm – 4:45pm
Daniil Yurchenko, Panagiotis Alevras	Passive vibration mitigation of a crane's payload under parametric excitation	4:45pm – 5:00pm

DAY 3 – Thursday, February 18, 2021		3:30pm – 4:45pm
Recent trends in nonlinear dynamics **STOCHASTICITY AND NOISE II**		Zoom Virtual Room
Chairs: George Haller, Bala Balachandran		
Balint Kaszas, George Haller	Universal upper estimate for prediction errors under moderate model uncertainty	3:30pm – 3:45pm
Vipin Agarwal, Bala Balachandran	From chaotic dynamics to periodic dynamics: noise assisted response steering	3:45pm – 4:00pm
Alexis-Tzianni Charalampopoulos, Themistoklis Sapsis	Physically informed data-based closure schemes for turbulent systems	4:00pm – 4:15pm
Abdulrahman Alofi, Gizem Acar, Bala Balachandran	Noise influenced dynamics of two coupled oscillators	4:15pm – 4:30pm
Dario De Domenico, Giuseppe Quaranta, Giuseppe Ricciardi, Walter Lacarbonara	Optimal design and seismic performance of nonlinear TMD with pinched hysteresis	4:30pm – 4:45pm

DAY 3 – Thursday, February 18, 2021
5:15pm – 6:30pm CET (Central European Time)

DAY 3 – Thursday, February 18, 2021		5:15pm – 6:15pm
Concepts and methods in nonlinear dynamics **FLUID-STRUCTURE INTERACTION III**		Zoom Virtual Room
Chairs: David Barton, Andrea Arena		
Daniele Zulli, Giuseppe Piccardo, Angelo Luongo	A continuum model of flexible cable for nonlinear bifurcation analysis from a non-trivial fundamental path	5:15pm – 5:30pm
Kyoung Hyun Lee, David Barton, Ludovic Renson	Reduced-order modelling of flutter oscillations in an aero-elastic system using scientific machine learning	5:30pm – 5:45pm
Marten Hollm, Leo Dostal, Robert Seifried	Hydrodynamic forces acting on cylindrical piles subjected to wind forced nonlinear water waves	5:45pm – 6:00pm
Antonio Papangelo, Alessandro Nitti, Merten Stender, Björn Niedergesäß, Norbert Hoffmann	Vibration localization in weakly coupled airfoils subjected to flutter instability	6:00pm – 6:15pm

DAY 3 – Thursday, February 18, 2021		5:15pm – 6:30pm
Concepts and methods in nonlinear dynamics **REDUCED-ORDER MODELS II**		Zoom Virtual Room
Chairs: Cyril Touzé, George Haller		
Shobhit Jain, George Haller	Computation of spectral submanifolds and forced response in high-dimensional nonlinear mechanical systems	5:15pm – 5:30pm
Yichang Shen, Nassim Kesmia, Cyril Touzé, Alessandra Vizzaccaro, Loïc Salles	Reduced-order models for shallow spherical shells: comparison of direct normal form and modal derivatives for predicting the type of nonlinearity	5:30pm – 5:45pm
Evangelia Nicolaidou, Thomas Hill, Simon Neild	Conserving kinetic energy while identifying nonlinear reduced-order models	5:45pm – 6:00pm
Samantha Ceballes, Abdessattar Abdelkefi	Investigations on the nonlinear forced responses of nanobeams modeled with the general nonlocal theory	6:00pm – 6:15pm
Andrea Opreni, **Alessandra Vizzaccaro**, Cyril Touzé, Attilio Frangi	Reduced-order models of MEMs including large rotations with normal form approach	6:15pm – 6:30pm

DAY 3 – Thursday, February 18, 2021		5:15pm – 6:30pm
Concepts and methods in nonlinear dynamics **ANALYTICAL TECHNIQUES V**		Zoom Virtual Room
Chairs: Ivana Kovacic, Enrique Ponce		
Ashu Sharma	A new technique for the approximate analysis of quasi-periodic systems	5:15pm – 5:30pm
Jose S. Canovas, María Muñoz Guillermo	*q*-deformations of logistic family	5:30pm – 5:45pm
Loredana Flavia Vesa, Mihaela Neamtu	Global stability analysis of an unemployment model with two distributed time delays	5:45pm – 6:00pm
Paulo Gomes, Nuno Franco, **Luis Silva**	Classification of a family of Lorenz knots with reducible symbolic dynamics	6:00pm – 6:15pm
Javier Ros, Enrique Ponce, Andrés Amador	Hidden attractors in 4D discontinuous piecewise linear Memristor oscillators	6:15pm – 6:30pm

DAY 3 – Thursday, February 18, 2021		5:15pm – 6:15pm
Nonlinear dynamics of mechanical and structural systems **MECHANICAL SYSTEMS AND STRUCTURES IV**		Zoom Virtual Room
Chairs: James Gibert, David Wagg		
Nidish Narayanaa Balaji, Matthew R. W. Brake	Nonlinear modal analysis through the generalization of the eigenvalue problem: applications for dissipative dynamics	5:15pm – 5:30pm
Fotios Georgiades	Augmented perpetual manifolds of mechanical systems	5:30pm – 5:45pm
Marek Metelski, Łukasz Drąg, Stanisław Wojciech	Dynamic models of the cranes applied to offshore wind farm service	5:45pm – 6:00pm
Uğurcan Eroğlu, **Giuseppe Ruta**	Perturbations for non-local elastic vibration of circular arches	6:00pm – 6:15pm

DAY 3 – Thursday, February 18, 2021		5:15pm – 6:30pm
Nonlinear dynamics of mechanical and structural systems **SYSTEM IDENTIFICATION AND SHM IV**		Zoom Virtual Room
Chairs: Giuseppe Quaranta, Sami F. Masri		
Zihan Liu, T. Haj Mohamad, Shahab Ilbeigi, **C. Nataraj**	Proper and smooth orthogonal decompositions for detection of gear system defects in rotating machinery	5:15pm – 5:30pm
Alex Binder, **Micah Cheng-Guajardo**, Matthew Vasquez, Samantha Ceballes, Sandra Zimmerman, Abdessattar Abdelkefi	Insights on the geometric and material input probability uncertainties effects on the nonlinear dynamical responses of beams	5:30pm – 5:45pm
Rodrigo T. Rocha, Feras Alfosail, Wen Zhao, Mohammad Younis, Sami F. Masri	Nonparametric identification of a nonlinear MEMS resonator	5:45pm – 6:00pm
Diego Matos S. L., Americo Cunha Jr	On the physical consistency of evolution laws obtained with sparse regression	6:00pm – 6:15pm
Federica Mezzani, Gianluca Pepe, Nicola Roveri, Antonio Carcaterra	Mine clearance through an artificial intelligence flying drone	6:15pm – 6:30pm

DAY 3 – Thursday, February 18, 2021		5:15pm – 6:30pm
Recent trends in nonlinear dynamics **BIOCAPSULE ROBOTS II**		Zoom Virtual Room
Chairs: Felix Chernousko, Sebastien Baguet		
Yang Liu, **Dimosthenis Tsalagradas**, Jiyuan Tian, Jiajia Zhang, Bingyong Guo	Investigation of force magnification for the vibro-impact capsule system using FEA	5:15pm – 5:30pm
Jiyuan Tian, Yang Liu, Bingyong Guo, Shyam Prasad	Finite element modelling of a vibro-impact capsule moving in the small intestine	5:30pm – 5:45pm
Yang Liu, Joseph Páez Chávez, Jiajia Zhang, Jiyuan Tian, Bingyong Guo, Shyam Prasad	Optimisation verification for a millimetre-scale vibro-impact capsule system	5:45pm – 6:00pm
Jiajia Zhang, Jiyuan Tian, Bingyong Guo, Yang Liu, Shyam Prasad	Development of a vibro-impact self-propelled capsule in millimetre scale	6:00pm – 6:15pm
Bingyong Guo, **Joseph Páez Chávez**, Yang Liu	On discontinuity-induced bifurcations in a piecewise-linear capsule system	6:15pm – 6:30pm

DAY 3 – Thursday, February 18, 2021		5:15pm – 6:30pm
Recent trends in nonlinear dynamics **BIOLOGICAL SYSTEMS DYNAMICS I**		Zoom Virtual Room
Chairs: Ludovic Renson, Haithem E Taha		
Martin Garrad, Ludovic Renson, Helmut Hauser	Nonlinear dynamics of a synthetic spider web	5:15pm – 5:30pm
Fanni Kádár, Gabor Stepan	Supercritical Hopf bifurcation in valve dynamics	5:30pm – 5:45pm
Ehsan Askari, Michael S. Andersen	A forward dynamics methodology to study nonlinear dynamics and wear of total knee arthroplasties	5:45pm – 6:00pm
Hina Shaheen, Sundeep Singh, Roderick Melnik	Mathematical modeling of calcium-mediated exosomal dynamics in neural cells	6:00pm – 6:15pm
Shady Ahmed, Omer San, Sivaramakrishnan Lakshmivarahan	Forward sensitivity analysis of the FitzHugh-Nagumo system	6:15pm – 6:30pm

DAY 4 – Friday, February 19, 2021
9:00am – 10:15am CET (Central European Time)

DAY 4 – Friday, February 19, 2021		9:00am – 10:00am
Nonlinear dynamics of mechanical and structural systems **MULTISTABLE OSCILLATORS**		Zoom Virtual Room
Chairs: Daniil Yurchenko, Xugang Hua		
Ayman Nasir, Neil Sims, David Wagg	Exploring the dynamics of viscously damped nonlinear oscillators via damped backbone curves: A normal form approach	9:00am – 9:15am
Ma Wensai, Zhang Wei	Complex dynamics of a bi-stable asymmetric laminated composite square panels	9:15am – 9:30am
Vaibhav Tandel, Jayaprakash K R	Dynamics of escape from a magnetic double-well potential	9:30am – 9:45am
Ilham Kirrou, Mohamed Belhaq	Quasiperiodic stability in nonlinear delayed coupled oscillators	9:45am – 10:00am

DAY 4 – Friday, February 19, 2021		09:00am – 10:00am
Recent trends in nonlinear dynamics **MEMS/NEMS IV**		Zoom Virtual Room
Chairs: Lifeng Wang, Alexey Lukin		
Irina Papkova, Tatyana Tatyana, **Vadim Krysko**, Anton Krysko	Nonlinear dynamics of NEMS/MEMS elements in the form of beams taking into account the temperature field, radiation exposure, elastoplastic deformations	09:00am – 09:15am
Alexey Lukin, Ivan Popov	Effect of mechanical nonlinearity on dynamics of MEMS gyroscope drive mode oscillator circuit with automatic gain control and phase locked loop	09:15am – 09:30am
Ekaterina Zavorotneva, Alexey Lukin, Ivan Popov	Dynamics of disk-based MEMS Coriolis vibrating gyroscope	09:30am – 09:45am
Uğurcan Eroğlu	Approximate solutions to axial vibrations of nanobars in nonlinear elastic medium	09:45am – 10:00am

DAY 4 – Friday, February 19, 2021		09:00am – 10:15am
Recent trends in nonlinear dynamics **METAMATERIALS II**		Zoom Virtual Room
Chairs: Fernando Fraternali, Giuseppe Ruta		
Xiao-Dong Yang *(Minikeynote)*	Dynamics and wave manipulations of gyroscopic metamaterials	09:00am – 09:30am
Marco Miniaci, Matteo Mazzotti, Ada Amendola, Fernando Fraternali	Dispersion diagram alteration through the application of an external state of prestress in inertially amplified phononic crystals	09:30am – 09:45am
Amirsajjad Rezaei, Federica Mezzani, Antonio Carcaterra	Long-range resonator-based metamaterials	09:45am – 10:00am
Alessandro Fortunati, Andrea Bacigalupo, Marco Lepidi, Andrea Arena, Walter Lacarbonara	Perturbation approach to a cellular metamaterial system with embedded vibration absorbers	10:00am – 10:15am

DAY 4 – Friday, February 19, 2021
10:30am – 12:00pm CET (Central European Time)

DAY 4 – Friday, February 19, 2021		10:30am – 12:00pm
Concepts and methods in nonlinear dynamics **FLUID-STRUCTURE INTERACTION IV**		Zoom Virtual Room
Chairs: Marco Lepidi, Antonio Papangelo		
Harry Carpenter, Alireza Gholipour, Mergen Ghayesh, Anthony Zander, Peter Psaltis	Effect of nonlinear blood viscosity on LDL transport and fluid-structure interaction biomechanics in a multi-stenosis left circumflex coronary artery	10:30am – 10:45am
Xiaochen Wang, Mergen Ghayesh, Anthony Zander, Andrei Kotousov	Wall shear stress for an aorta with aneurysms via fluid-structure analysis	10:45am – 11:00am
Anandamoy Mukhopadhyay, **Souradip Chattopadhyay**, Amlan K. Barua	Effects of strong viscosity with variable fluid properties on falling film instability	11:00am – 11:15am
Shashidhar Reddy Rajidi, Abhay Gupta, Satyajit Panda	Nonlinear dynamics of cross-flow heat exchanger tube conveying fluid	11:15am – 11:30am
Artem Nuriev, Airat Kamalutdinov	Nonlinear hydrodynamic damping of elastic vibrations of beams near a plane boundary	11:30am – 11:45am
Weng Song, Maolin Liao	Dynamics of the fluid-structure coupling model of a direct-acting relief valve	11:45am – 12:00pm

DAY 4 – Friday, February 19, 2021		10:30am – 12:00pm
Nonlinear dynamics of mechanical and structural systems **AEROSPACE STRUCTURES**		Zoom Virtual Room
Chairs: Ti Chen, Marina Shitikova		
Anton Doroshin	Unloading the angular momentum of spacecraft using internal gravitational dampers	10:30am – 10:45am
Bole Ma, Baozeng Yue, Yong Tang, Jiarui Yu	Studies on the liquid sloshing and rigid-liquid-flexible coupling dynamics of spacecraft	10:45am – 11:00am
Ti Chen	Continuous leaderless synchronization control of multiple spacecraft on SO(3)	11:00am – 11:15am
Gianluca Pepe, **Elena Paifelman**, Antonio Carcaterra	Aeroelastic dynamic feedback control of a Volterra's airfoil	11:15am – 11:30am
Marina Shitikova, Vladimir Kandu	Nonlinear vibrations of a cylindrical pipe embedded in a fractional derivative medium	11:30am – 11:45am
Marina Shitikova, **Anastasiya Krusser**	The effect of boundary conditions on nonlinear vibrations of plates on a viscoelastic base via the fractional calculus standard linear solid model	11:45am – 12:00pm

DAY 4 – Friday, February 19, 2021		10:30am – 12:00pm
Recent trends in nonlinear dynamics **BIOLOGICAL SYSTEMS DYNAMICS II**		Zoom Virtual Room
Chairs: Dumitru Caruntu, Jun Ma		
Carla Pinto, João Maurício de Carvalho	Dynamics of cancer cells in HIV-infected patients for distinct immune responses	10:30am – 10:45am
Zilu Cao, Lin Du	Electrical activities and magnetic stimulation effects in a CBGT neural network	10:45am – 11:00am
Sunsu Kurian Thottil, Rose P. Ignatius	Electromagnetic induction on neurons through field coupling and Memristor	11:00am – 11:15am
Ilya Sysoev, Natalia Makarova, Marina Sysoeva, Lyudmila Vinogradova	Modeling limbic seizure initiation with an ensemble of delay coupled neorooscillators	11:15am – 11:30am
James Emilian, Veda Samhitha Kanduri, Chandan Bose, Jaromir Horacek, Venkatramani Jagadish	Bifurcation behavior in vocal folds and its impact on physiological conditions	11:30am – 11:45am
Julijana Simonović, Thomas Woolley	Forced predator-prey system employed for bone mechano-transduction description	11:45am – 12:00pm