

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

## INSTITUTIONAL SPONSORS



**SAPIENZA**  
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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 -

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- 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 -

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

9:00am - 10:30am CET (Central Time Europe)	POLYTEC
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10:30am - 12:00pm CET (Central Time Europe)	MSC
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3.30pm - 5:00pm CET (Central Time Europe)	SPRINGER
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# 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.

Hi First Name Last Name,

You are invited to a Zoom webinar.

Date Time: Feb 10, 2021 10:00 AM Rome  
Topic: NODYCON 2021 Technical Session

Join from a PC, Mac, iPad, iPhone or Android device:

 [Click Here to Join](#)  
Note: This link should not be shared with others; it is unique to you.  
Passcode: NODYCON21  
[Add to Calendar](#) [Add to Google Calendar](#) [Add to Yahoo Calendar](#)


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).

Hi First Name Last Name,


You are invited to a Zoom webinar.

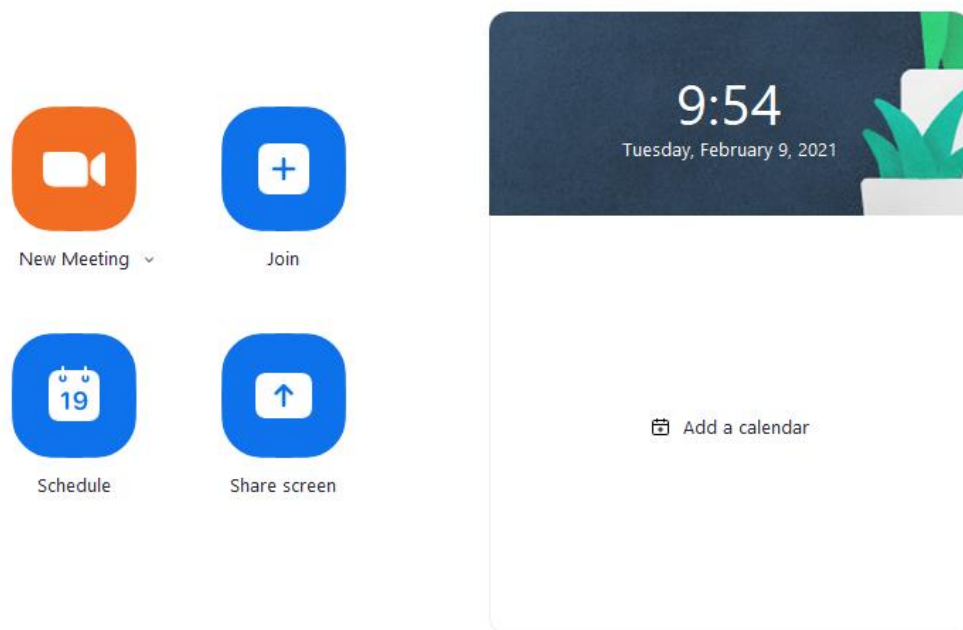
Date Time: Feb 10, 2021 10:00 AM Rome  
Topic: NODYCON 2021 Technical Session

Join from a PC, Mac, iPad, iPhone or Android device:

[Click Here to Join](#)  
Note: This link should not be shared with others; it is unique to you.  
 Passcode: NODYCON21  
[Add to Calendar](#) [Add to Google Calendar](#) [Add to Yahoo Calendar](#)

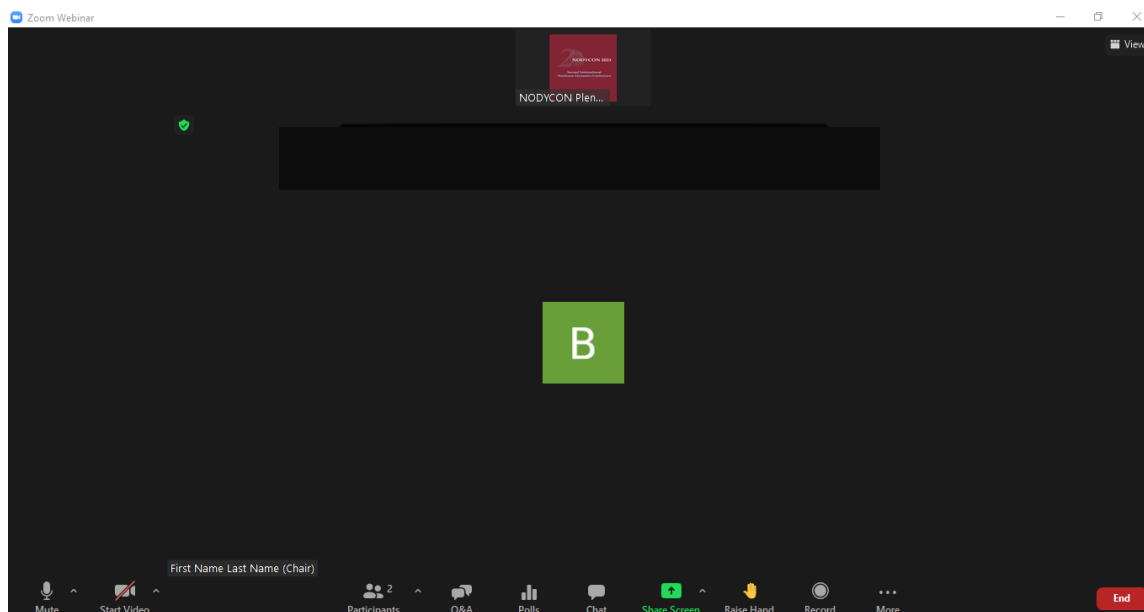
Or iPhone one-tap:  
US: +16465588656,,97914911426# or +16699009128,,97914911426#

Or Telephone:  
Dial(for higher quality, dial a number based on your current location):  
US: +1 646 558 8656 or +1 669 900 9128 or +1 253 215 8782 or +1 301 715 8592 or +1 312 626 6799 or +1 346 248 7799  
 Webinar ID: 979 1491 1426  
Participant ID: 360622

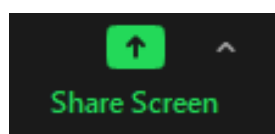
This is a screenshot of the Zoom desktop application's 'Join Meeting' dialog box. The window has a standard title bar with the Zoom logo on the left and a close button (X) on the right. The main heading inside the window is 'Join Meeting'. Below the heading is a text input field with the placeholder text 'Meeting ID or Personal Link Name' and a dropdown arrow on the right. The field contains the text '979 1491 1426'. Below this is another text input field with the placeholder text 'First Name Last Name'. Underneath the name field are two checkboxes: 'Do not connect to audio' and 'Turn off my video'. At the bottom of the dialog are two buttons: a blue 'Join' button and a white 'Cancel' button with a grey border.

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.



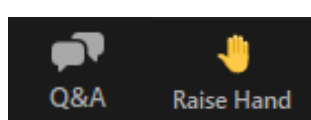
At the end of the presentation the Speaker/Panelist must click on “Stop Share” to stop the sharing (see screenshot below).



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).

What is the sensitivity of the response to the parameter  $k$ ?

Answer live

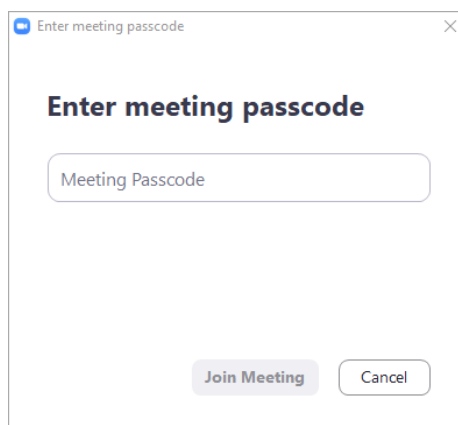
Type answer

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

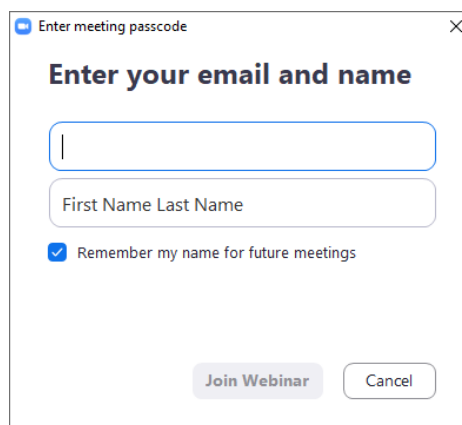
An internet connection with upload and download speed at least of 3 Mb/s is required to attend the Conference. The links to join the selected sessions and passcode will be published in the NODYCON 2021 website (<https://nodycon.org/2021>) under LIVE PROGRAM and also included in the Final Program pdf 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).



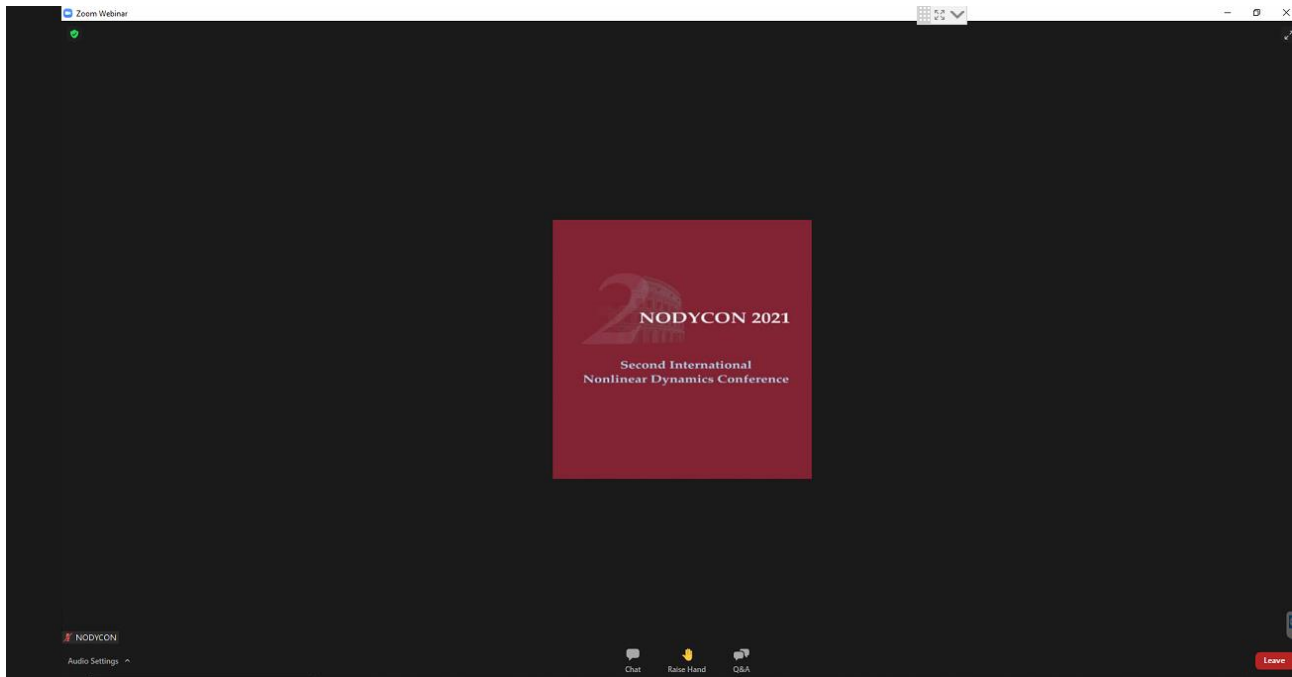
A screenshot of a Zoom dialog box titled "Enter meeting passcode". The dialog has a close button (X) in the top right corner. The main heading is "Enter meeting passcode". Below the heading is a text input field labeled "Meeting Passcode". At the bottom of the dialog are two buttons: "Join Meeting" and "Cancel".

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.



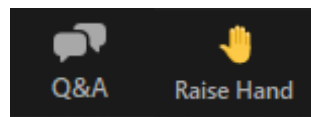
A screenshot of a Zoom dialog box titled "Enter meeting passcode". The dialog has a close button (X) in the top right corner. The main heading is "Enter your email and name". Below the heading is a text input field for an email address. Below the email field is another text input field labeled "First Name Last Name". Below the name field is a checkbox with the label "Remember my name for future meetings", which is currently checked. At the bottom of the dialog are two buttons: "Join Webinar" and "Cancel".

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

The social program includes a video Lecture on Raphael and the Renaissance Arts at the Vatican Museums delivered by Dr. Irene Baldriga, Sapienza Professor of Art History.

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

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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

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# SESSIONS ACRONYMS

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

DAY 1 – Tuesday, February 16, 2021						
8:00am - 8:25am	Opening Session and Welcome					
8:25am - 10:10am	Keynote Lectures					
10:10am - 10:30am	Coffee Break					
10:30am - 11:40am	Keynote Lectures					
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
12:00pm - 1:00pm	NSS - I	BDI - I	AT - I	MSS - I	SS-C19 - I	MNS - I
1:00pm - 2:00pm	Lunch Break					
2:00pm - 3:30pm	Keynote Lectures					
3:30pm - 5:00pm	Keynote Lectures					
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
9:00am - 10:15am	FSI - II	NSS - II	RS - III	MIET - I	PED	EH - II
10:15am - 10:30am	Coffee Break					
10:30am - 12:00pm	AT - II	CSU - I	CND - II	SIS - II	NVC - I	CNS - I
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
5:00pm - 5:15pm	Coffee Break					
5:15pm - 6:30pm	NSS – III	NW - I	MSS - III	MFS - I	MNS - II	FOS - I
						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	NS	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	FSI - V	TD	AT - IV	MIET - II	MNS - III	MM - I	
1:15pm - 2:15pm	Lunch Break						
2:15pm - 3:15pm	NODYS General Assembly Meeting						
3:15pm - 3:30pm	Coffee Break						
3:30pm - 5:00pm	CSU - III	CND - V	NW - III	BDI - IV	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	Zoom Virtual Room	Zoom Virtual Room	Zoom Virtual Room
9:00am - 10:15am	MSO	MSS - V	MFS - III	MNS - IV	MM - II	EH - V
10:15am - 10:30am	Coffee Break					
10:30am - 12:00pm	FSL - IV	CSU - IV	AS	NVC - V	VD	FOS - II
12:00pm - 2:15pm	Lunch Break					
2:15pm - 3:15pm	Closing Ceremony					

# PLENARY PROGRAM

## TUESDAY – February 16, 2021

8:00am - 8:07 am CET	WELCOME (W.LACARBONARA)
8: 07am - 8:12am CET	ADDRESS BY SAPIENZA RECTOR ANTONELLA POLIMENI
8:12am - 8:15am CET	MINUTE OF SILENCE (G.REGA) IN MEMORY OF D.T. MOOK, L. MANEVITCH, I. I. BLECHKMAN
8:15am - 8:25am CET	NODYCON 2021 SPONSORS

## PLENARY KEYNOTE LECTURES

Chairs: Giuseppe Rega, Friedrich Pfeiffer

<b>J. Kurths</b>	Exploring predictability of extreme climate events via a complex network approach	8:25am – 9:00am
<b>G. Haller</b>	Fast reduction of nonlinear finite-element models to spectral submanifolds	9:00am – 9:35am
<b>M.P. Cartmell</b>	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

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

Chairs: Sotirios Natsiavas, Muhammad Hajj

<b>Anita Lekhwani</b> (Springer)	30 Years of Nonlinear Dynamics	2:00pm – 2:20pm
<b>Walter Lacarbonara</b>		
<b>C. Nataraj</b>	Can nonlinear dynamics improve medical diagnostics?	2:20pm – 2:55pm
<b>A. F. Vakakis</b>	Nonlinear acoustic non-reciprocity	2:55pm – 3:30pm

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

Chairs: C. Nataraj, Harry Dankowicz

<b>B. Balachandran</b>	COVID-19: Evolution of infection dynamics	3:30pm – 4:00pm
<b>YangQuan Chen</b>	Modeling, prediction, mitigation and vaccine policy for COVID-19 using big data and fractional calculus	4:00pm – 4:30pm
<b>Jose Machado</b>	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

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**THURSDAY – February 18, 2021**

2:15pm - 3:15pm CET (Central Time Europe)

NODYS GENERAL ASSEMBLY MEETING

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**FRIDAY – February 19, 2021**


2:15pm - 3:15pm CET (Central Time Europe)


ALI H.NAYFEH AWARD & CLOSING


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# 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 		Zoom Virtual Room
<b>NONSMOOTH SYSTEMS I</b>		
Chairs: Fotios Georgiades, Alessandro Tasora		
<b>Alessandro Tasora</b> , Dario Mangoni, Simone Benatti	Solving non-smooth dynamic problems using the alternating direction method of multipliers	12:00pm – 12:15pm
<b>Alexey Platonov</b>	Stability analysis for a class of non-stationary impulsive switched systems	12:15pm – 12:30pm
<b>Dheeraj Tripathi</b> , 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
<b>Weijia Yang</b> , 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 		Zoom Virtual Room
<b>BIFURCATION AND DYNAMIC INSTABILITY I</b>		
Chairs: Angelo Luongo, Tamas Kalmar-Nagy		
<b>Simona Di Nino</b> , Angelo Luongo	Nonlinear dynamics of a base-isolated beam under turbulent wind flow	12:00pm – 12:15pm
<b>Martin Volvert</b> , Gaetan Kerschen	Characterizing fundamental, superharmonic and subharmonic resonances using phase locked nonlinear modes	12:15pm – 12:30pm
<b>Yaobing Zhao</b> , Henghui Lin, Lincong Chen	Influence of temperature on bifurcation analysis of suspended cables close to two-to-one internal resonance	12:30pm – 12:45pm
<b>Francesco D'Annibale</b> , 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 		Zoom Virtual Room
<b>ANALYTICAL TECHNIQUES I</b>		
Chairs: Claude-Henri Lamarque, Alice Cicirello		
<b>Ivana Kovacic</b>	Externally excited purely nonlinear oscillators: exact steady-state solutions, their approximations and further benefits	12:00pm – 12:15pm
<b>Luca Marino</b> , Alice Cicirello	Dynamic response features and motion regimes of multimodal systems with Coulomb damping	12:15pm – 12:30pm
Angelo Luongo, Arnaldo Casalotti, <b>Daniele Zulli</b>	Perturbation analysis for large amplitude vibrations of beam-like pipes with deformable cross-section	12:30pm – 12:45pm
<b>Anton Belyakov</b> , 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 		Zoom Virtual Room
<b>MECHANICAL SYSTEMS AND STRUCTURES I</b>		
Chairs: Oleg Gendelman, Yuri Mikhlin		
<b>Haoran Xu</b> , Yuda Hu	Magnetoelastic nonlinear natural vibration analysis of an annular plate in induced non-uniform magnetic field	12:00pm – 12:15pm
<b>Guangrong Chen</b> , Sheng Guo, Bowen Hou, Junzheng Wang	Generalized SLIP model for legged robots	12:15pm – 12:30pm
<b>Mehdi Akbarzadeh</b> , 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, <b>Ashok Kumar Pandey</b>	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 		Zoom Virtual Room
<b>MEMS/NEMS I</b>		
Chairs: Stefano Lenci, Dumitru Caruntu		
<b>Lifeng Wang</b> ( <i>Minikeynote</i> )	Nonlinear thermal vibration of typical nanostructures	12:00pm – 12:30pm
Ata Keşkekler, Oriel Shoshani, Martin Lee, Herre van der Zant, Peter Steeneken, <b>Farbod Alijani</b>	Tuning nonlinear damping of atomically thin membranes	12:30pm – 12:45pm
<b>Laura Ruzziconi</b> , 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 – 1:00pm
Recent trends in nonlinear dynamics 		Zoom Virtual Room
<b>STOCHASTICITY AND NOISE I</b>		
Chairs: Giuseppe Ricciardi, Giuseppe Quaranta		
<b>Xiao-Ming Liu</b>	Periodic solution of Mathieu system induced by fuzzy uncertainty	12:00pm – 12:15pm
<b>Mahashweta Patra</b> , Sayan Gupta	Stochastic bifurcations in three-dimensional piecewise smooth systems	12:15pm – 12:30pm
<b>Varun H S</b> , Aswathy M. S., Sunetra Sarkar	Stochastic bifurcation in an aeroelastic system with additive noise.	12:30pm – 12:45pm
<b>Ya-Hui Sun</b> , Yong-Ge Yang, Ling Hong, Wei Xu	Stochastic Averaging for a fractional-order vibro-impact oscillator subject to colored noise excitation	12:45pm – 1:00pm

DAY 1 – Tuesday, February 16, 2021		12:00pm – 12:45pm
Special Session 		Zoom Virtual Room
<b>COMPLEX DYNAMICS OF COVID-19: MODELING, PREDICTION AND CONTROL I</b>		
Chairs: Jun Ma, YangQuan Chen		
<b>Stefano Iacus</b> , 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
<b>Lihong Guo</b> , 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
<b>Yanting Zhao</b> , 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		Zoom Virtual Room
<b>FLUID-STRUCTURE INTERACTION I</b>		
Chairs: Celso Pesce, Abdessattar Abdelkefi		
<b>Adam Bouma</b> , 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
<b>Renato Orsino</b> , 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
<b>Letícia Madi</b> , 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
<b>Widad Yossri</b> , 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		Zoom Virtual Room
<b>COMPUTATIONAL NONLINEAR DYNAMICS I</b>		
Chairs: Ludovic Renson, Themistoklis Sapsis		
<b>Alireza Mojahed</b> , Lawrence Bergman, Alexander Vakakis	A New Numerical Inverse Wavelet Transform and its Application to Dynamics	5:30pm – 5:45pm
<b>Mark Blyth</b> , Lucia Marucci, Ludovic Renson	Local surrogate models for control-based continuation of multiple-timescale systems	5:45pm – 6:00pm
<b>Merten Stender</b> , Norbert Hoffmann	Introducing an open-source software for computing the basin stability of multi-stable dynamical systems	6:00pm – 6:15pm
<b>Stephen Guth</b> , 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 		Zoom Virtual Room
<b>SYSTEM IDENTIFICATION AND SHM I</b>		
Chairs: Sami Masri, Annamaria Pau		
<b>Antoine Blanchard</b> , Themistoklis Sapsis	Output-weighted importance sampling for uncertainty quantification	5:30pm – 5:45pm
<b>Matthew Vasquez</b> , 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
<b>Samuel Rudy</b> , Themistoklis Sapsis	Sparse methods for automatic relevance determination and applications to dynamical systems	6:00pm – 6:15pm
<b>Robert Szalai</b>	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 		Zoom Virtual Room
<b>CONSTITUTIVE AND PHENOMENOLOGICAL MODELS</b>		
Chairs: Luciano Rosati, Jinsong Pei		
<b>Nicolò Vaiana</b> , Davide Pellecchia, Salvatore Sessa, Luciano Rosati	Modeling of the axial hysteretic behavior of Wire Rope Isolators using a novel asymmetric rate-independent model	5:30pm – 5:45pm
<b>Bruno Areias</b> , 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
<b>Jin-Song Pei</b> , Biagio Carboni, Walter Lacarbonara	Modeling Asymmetric Hysteresis Inspired and Validated by Experimental Data	6:00pm – 6:15pm


DAY 1 – Tuesday, February 16, 2021		5:30pm – 6:30pm
Nonlinear dynamics of mechanical and structural systems 		Zoom Virtual Room
<b>ROTATING SYSTEMS I</b>		
Chairs: Mohammad Al-Shudeifat, Fotios Georgiades		
<b>Mohammad Al-Shudeifat</b>	Negative potential energy and stiffness content in accelerated cracked rotor system	5:30pm – 5:45pm
<b>Lucas Volpi</b> , Thiago Ritto	Nonlinear drill-string vibrations with random distributed unbalance	5:45pm – 6:00pm
<b>Anthony Quintana</b> , 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, <b>Gabriele Perozzi</b> , 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 		Zoom Virtual Room
<b>SENSORS AND ACTUATORS I</b>		
Chairs: Eihab Abdel-Rahman, Hadi Arvin		
<b>Giulia Lanzara</b>	Experimental demonstration of fairly flat frequency response of an electrospun PVDF fiber mat	5:30pm – 5:45pm
<b>Giulia Lanzara</b>	Locally actuated electrospun piezoelectric webs	5:45pm – 6:00pm
<b>Ibrahim Gebrel</b> , Ligang Wang, Samuel Asokanthan	Influence of Model Nonlinearities on the Dynamics of Ring-type Gyroscopes	6:00pm – 6:15pm
<b>Julio Cesar Basilio</b> , 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 		Zoom Virtual Room
<b>ENERGY HARVESTING I</b>		
Chairs: Muhammad Hajj, Stephanos Theodossiades		
<b>Ben Gunn</b> , <b>Stephanos Theodossiades</b> , Steve Rothberg	A passively self-tuned torsional vibration energy harvester	5:30pm – 5:45pm
<b>Adam Bouma</b> , Rui Vasconcellos, Abdessattar Abdelkefi	Impacts of multi-segmented discontinuous functions on the dynamics of piezoaeroelastic energy harvesters	5:45pm – 6:00pm
<b>Americo Cunha Jr</b>	The cross-entropy method for optimization of energy harvesting systems	6:00pm – 6:15pm
<b>Jose M. Balthazar</b> , 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 		Zoom Virtual Room
<b>FLUID-STRUCTURE INTERACTION II</b>		
Chairs: Angelo Luongo, Narakorn Srinil		
<b>Xugang Hua</b> (Minik keynote)	Multi-mode vortex-induced vibration and its suppression of long-span suspension bridges	9:00am – 9:30am
<b>Victoria Kurushina</b> , Narakorn Srinil, Juan Padrino, David Swailes	Phenomenological multimode models for flexible pipelines transporting slug flows and undergoing vortex-induced vibrations	9:30am – 9:45am
<b>Rik Mondal</b> , 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, <b>Martins Irbe</b>	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 		Zoom Virtual Room
<b>NONSMOOTH SYSTEMS II</b>		
Chairs: Gabor Stepan, Giuseppe Rega		
<b>Mate Antali</b> , Gabor Stepan	Slipping-rolling transitions of a body with two contact points	9:00am – 9:15am
<b>Yusheng Zhou</b> , Zaihua Wang	State-dependent switching law for stabilization to a switched time-delay system with two unstable subsystems	9:15am – 9:30am
<b>Dmitri Knyazkov</b> , Tatiana Figurina	Properties of the motion of several interacting bodies under periodic excitation	9:30am – 9:45am
<b>Pankaj Kumar</b> , S. Narayanan, Sayan Gupta	Dynamics of discontinuous nonlinear oscillators with compliant contacts subjected to combined harmonic and random loadings	9:45am – 10:00am
<b>Sai Vishal Gali</b> , 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 – 10:00am
Nonlinear dynamics of mechanical and structural systems 		Zoom Virtual Room
<b>ROTATING SYSTEMS III</b>		
Chairs: Andrea Arena, Biagio Carboni		
<b>Qingyang Zheng</b> , Yongfeng Yang, Jing Wang	Chebyshev convex method for rotor dynamic response with large convex uncertainties	9:00am – 9:15am
<b>Zhiyuan Wu</b> , Wen-Ming Zhang	Dynamic characteristics of the rotating cracked blade considering dovetail attachment	9:15am – 9:30am
<b>Kelly Yee</b> , Mergen Ghayesh	Dynamics of a rotating Euler-Bernoulli microbeam	9:30am – 9:45am
<b>Xiao Jun Gu</b>	Nonlinear Dynamics Analysis of Rotating Pretwisted Cantilever Thin Plate Reinforced by Graphene	9:45am – 10:00am

DAY 2 – Wednesday, February 17, 2021		9:00am – 10:15am
Nonlinear dynamics of mechanical and structural systems 		Zoom Virtual Room
<b>MODAL INTERACTIONS AND ENERGY TRANSFER I</b>		
Chairs: Yannis Georgiou, Marco Lepidi		
<b>Houjun Kang</b> (Minikeynote)	Planar nonlinear dynamic analysis of cable-stayed bridge considering support stiffness	9:00am – 9:30am
Vinciane Guillot, <b>Alireza Ture Savadkoobi</b> , Claude-Henri Lamarque	Study of an electromechanical absorber while the main structure present a 1:3 internal resonance	9:30am – 9:45am
<b>Yannis Georgiou</b>	On learning the impact dynamics of a physical beam structure coupled to a multi-stable continuum	9:45am – 10:00am
<b>Giorgio Gobat</b> , 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 – 10:15am
Nonlinear dynamics of mechanical and structural systems 		Zoom Virtual Room
<b>PASSIVE ENERGY DAMPING</b>		
Chairs: Luciano Rosati, Michael McFarland		
<b>Andrea Salvatore</b> , Biagio Carboni, Walter Lacarbonara	Nonlinear dynamic response of a negative stiffness-shape memory alloy isolation system	9:00am – 9:15am
<b>Nicola Menga</b> , Francesco Bottiglione, Giuseppe Carbone	Nonlinear viscoelastic damping for seismic isolation	9:15am – 9:30am
<b>Hari Prasad Chintia</b> , Animesh Chatterjee	Identification of non-polynomial forms of damping nonlinearity in dynamic systems using harmonic probing and higher order FRFs	9:30am – 9:45am
<b>Zhenjiang Zhou</b> , Chaoke Wang, Huancai Lu, D. Michael McFarland	Design of granular chains to reduce the force transmitted to a fixed barrier	9:45am – 10:00am
Han Meng, <b>Dimitrios Chronopoulos</b>	Nonlinear negative stiffness oscillators for enhanced structural vibration absorption	10:00am – 10:15am

**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


<b>Kaiyuan Zhao</b> , Qichang Zhang	Galloping piezoelectric energy harvester for low wind speed	09:00am – 09:15am
<b>Mohammad Reyaz Ahmad Vali</b> , Shaikh Faruque Ali	Harvesting energy from 2D-array of harvesters	09:15am – 09:30am
<b>Santhosh B</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
<b>Krzysztof Kecik</b> , 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 – 12:00pm
Concepts and methods in nonlinear dynamics 		Zoom Virtual Room
<b>ANALYTICAL TECHNIQUES II</b>		
Chairs: Angelo Luongo, Tieding Guo		
<b>Zheng Fei</b> , Xu Jie, Yuan Xuegang	Quantitative and qualitative analysis of a class of general Duffing systems	10:30am – 10:45am
<b>Bo-Wei Qin</b> , Kwok-Wai Chung, Antonio Algaba, Alejandro J. Rodríguez-Luis	Estimating generic canard explosions via efficient symbolic computation	10:45am – 11:00am
<b>Bin Tang</b> , Weilei Wu	An approximate approach for solving the steady-state response of a two-stage nonlinear vibration isolation system	11:00am – 11:15am
<b>Aalokeparno Dhar</b> , 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, <b>Federico Zullo</b>	Non rectification of heat in graded Si-Ge alloys	11:30am – 11:45am
<b>Hua Li</b> , Yong Xu, Ralf Metzler, Jürgen Kurths	Transition path properties for one-dimensional systems under Poisson white noise	11:45am – 12:00pm

DAY 2 – Wednesday, February 17, 2021		10:30am – 12:00pm
Concepts and methods in nonlinear dynamics 		Zoom Virtual Room
<b>CHAOTIC SYSTEMS AND UNCERTAINTY I</b>		
Chairs: Luigi Fortuna, Guilherme R. Franzini		
<b>Zhao Chaofeng</b> , Ren Hai-Peng	Weakness analyzing and performance improvement for image encryption using chaos crossing cylinder	10:30am – 10:45am
<b>Qi Liu</b> , Yong Xu	Fixed-interval smoothing of an aeroelastic airfoil model in incompressible flow	10:45am – 11:00am
<b>Xiaoliang Gan</b> , Haoyu Wang, Ruoshi Yuan, Ping Ao	Is it always right to judge the dissipativity of a system by divergence?	11:00am – 11:15am
Arvind Raj, Sirshendu Mondal, <b>Venkatramani Jagadish</b>	Investigations into stochastic nonlinear aeroelastic responses using recurrence networks	11:15am – 11:30am
<b>Dionysios Sourailidis</b> , Christos Volos, Lazaros Moysis, Ioannis Stouboulos	Nonlinear phenomena and chaos in a tumor growth model	11:30am – 11:45am
<b>Wenzheng Zhang</b> , 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 – 11:45am
Concepts and methods in nonlinear dynamics 		Zoom Virtual Room
<b>COMPUTATIONAL NONLINEAR DYNAMICS II</b>		
Chairs: Liquan Chen, Sotrios Natsiavas		
<b>Sotrios Natsiavas</b> , Panagiotis Passas, Elias Paraskevopoulos	A novel time-stepping method for multibody systems with frictional impacts	10:30am – 10:45am
<b>Roberto Alcorta</b> , Benoit Prabel, Sebastien Baguet	DYNC: a Cast3M module for the bifurcation analysis of nonlinear mechanical vibrations	10:45am – 11:00am
<b>Xiao Ye Mao</b> , Hu Ding, Li- Qun Chen	The modal correction and the Dirac operator acting on nonlinear and non-homogenous boundaries of one-dimensional structures	11:00am – 11:15am
<b>Jiarui Yu</b> , Baozeng Yue, Bole Ma	Isogeometric analysis for large-amplitude sloshing	11:15am – 11:30am
Daniela Addessi, Paolo Di Re, <b>Cristina Gatta</b> , Mariacarla Nocera	Two-scale curved beam model for dynamic analysis of masonry arches	11:30am – 11:45am

DAY 2 – Wednesday, February 17, 2021		10:30am– 11:45am
Nonlinear dynamics of mechanical and structural systems 		Zoom Virtual Room
<b>SYSTEM IDENTIFICATION AND SHM II</b>		
Chairs: Xugang Hua, Antonio Carcaterra		
<b>Rui Zhu</b> , Stefano Marchesiello, Dario Anastasio, Dong Jiang, Qingguo Fei	Identification of nonlinear damping using nonlinear subspace method	10:30am – 10:45am
<b>Nadezhda Nikolaeva</b> , Anton Sheludko	Application of particle swarm optimization for parameter estimation of the logistic map	10:45am – 11:00am
<b>Maicol Laurenza</b> , Gianluca Pepe, Antonio Carcaterra	Identification of robot quadrupeds' gait by genetic algorithm	11:00am – 11:15am
<b>Sha Wei</b> , Zhike Peng, Hu Ding, Li-Qun Chen	Identification of MDOF time-varying systems under forced vibration using intrinsic chirp component decomposition	11:15am – 11:30am
<b>Michael Souza</b> , Edison Fabian Caballero, Daniel Castello, Thiago Ritto	Evaluation of the performance of three bit-rock interaction models calibrated with field data using ABC and Sobol sensitivity approaches	11:30am – 11:45am

<b>DAY 2 – Wednesday, February 17, 2021</b>	<b>10:30am – 12:00pm</b>
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Nonlinear dynamics and control

Zoom Virtual Room

**NONLINEAR VIBRATION CONTROL I**

Chairs: Ju H. Park, Maurizio De Angelis

<b>Joseph Chang Lun Chan</b> , 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
<b>Stefano Pagliaro</b> , Angelo Di Egidio	Dynamic performances of a 2 dof system coupled with rigid block and inerters	10:45am – 11:00am
<b>Muqing Niu</b> , Li-Qun Chen	Nonlinear vibration isolation via compliant mechanisms and wire ropes	11:00am – 11:15am
<b>Youssef Fahmy</b> , Ayman El-Badawy	Fuzzy model predictive pitch control of flexible wind turbine blade	11:15am – 11:30am
<b>Jian Peng</b> , 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
<b>Ge Yan</b> , Sen Wang, Wen-Ming Zhang	Large stroke quasi-zero stiffness vibration isolator by exploring geometric nonlinearity of r-shaped structure	11:45am – 12:00pm

<b>DAY 2 – Wednesday, February 17, 2021</b>	<b>10:30am – 12:00pm</b>
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Nonlinear dynamics and control

Zoom Virtual Room

**CONTROL OF NONLINEAR SYSTEMS I**

Chairs: Gabor Stepan, Arturo Buscarino

<b>Alexander Alyukov</b> , Michael Leamy	Arresting motion in nonlinear systems using two-scale command shaping	10:30am – 10:45am
<b>Yinnan Luo</b> , Ulrich Johannes Römer, Lena Zentner, Alexander Fidlin	Improving energy efficiency of a bipedal walker with optimized nonlinear elastic coupling	10:45am – 11:00am
<b>Bence Szaksz</b> , Gabor Stepan	Bifurcations in delayed collocated position control	11:00am – 11:15am
Ashwad Raaj, Venkatramani Jagadish, <b>Sirshendu Mondal</b>	Investigating amplitude death as a possible flutter suppression mechanism in a pitch-plunge aeroelastic system	11:15am – 11:30am
<b>Giuseppe Avon</b> , Arturo Buscarino	Simulation platform for resistive wall modes controller evaluation	11:30am – 11:45am
<b>De-Li Xuan</b> , Ze Tang, Ju H. Park	Stabilizing-delay-based impulsive control for cluster synchronization of nonlinearly coupled Lur'e networks	11:45am – 12:00pm



**DAY 2 – Wednesday, February 17, 2021**

**10:30am – 12:00pm**

Special Session 

Zoom Virtual Room


**IN MEMORY OF PROF. L. I. MANEVICH**


Chairs: Yuri Mikhlin, Francesco Pellicano


<b>Yuri Mikhlin</b> , Gayane Rudnyeva	Stability of similar nonlinear normal modes under stochastic excitation	10:30am – 10:45am
Shagen Shaginyan, <b>Margarita Kovaleva</b> , Leonid Manevitch	Pendulum under bi-harmonic excitation	10:45am – 11:00am
<b>Oleg Gendelman</b> , Tal Ezra, Alexander Fidlin	Escape of excited conservative 2DOF system from potential well	11:00am – 11:15am
Giovanni Iariccio, <b>Francesco Pellicano</b>	Nonlinear dynamics of spherical caps	11:15am – 11:30am
<b>Yuri Mikhlin</b> , Natalia Goloskubova	Analysis of the steady states stability using the Ince algebraization	11:30am – 11:45am
<b>Yuriy A. Kosevich</b>	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 		Zoom Virtual Room
<b>REDUCED-ORDER MODELS I</b>		
Chairs: Cyril Touzé, Eleni Chatzi		
<b>Konstantinos Vlachas</b> , Eleni Chatzi	Parametric model order reduction for localized nonlinear feature inclusion	12:15pm – 12:30pm
<b>Marco Pizzoli</b> , Francesco Saltari, Franco Mastroddi	Nonlinear reduced order model for vertical sloshing by employing neural networks	12:30pm – 12:45pm
<b>Mattia Cenedese</b> , Andrea Massocco, George Haller	Reduced-order modeling for wakes around bluff bodies using spectral submanifolds	12:45pm – 1:00pm
<b>Tieding Guo</b>	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 		Zoom Virtual Room
<b>EXPERIMENTAL DYNAMICS I</b>		
Chairs: Mohammad Younis, Farbod Alijani		
<b>Hasti Hayati</b> , David Eager, Sebastian Oberst	Recurrence plot quantification analysis of greyhound galloping gait	12:15pm – 12:30pm
<b>Giuseppe Avon</b> , Luigi Fortuna, Arturo Buscarino	Experimental Characterization of Nonlinear Pilot Induced Oscillations using a Flight Simulator	12:30pm – 12:45pm
<b>Maksymilian Bednarek</b> , 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 		Zoom Virtual Room
<b>SENSORS AND ACTUATORS II</b>		
Chairs: Hiroshi Yabuno, Dumitru Caruntu		
<b>Masamichi Uemori</b> , 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, <b>Hadi Arvin</b> , 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
<b>Shinpachiro Urasaki</b> , Yudai Tanaka, Hiroshi Yabuno	Proposition of nonlinear sensor-less amplitude control of cantilever for micro-viscometer	12:45pm – 1:00pm
<b>Andrea Salvatore</b> , 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 		Zoom Virtual Room
<b>BIOCAPSULE ROBOTS I</b>		
Chairs: Yang Liu, Felix Chernousko		
<b>Felix Chernousko</b>	Change of the body orientation by means of internal masses	12:15pm – 12:30pm
Bingyong Guo, <b>Yang Liu</b>	Vibro-impact dynamics of a universal experimental rig with two-sided constraints	12:30pm – 12:45pm
<b>Maolin Liao</b> , 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
<b>Van-Du Nguyen</b>	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 		Zoom Virtual Room
<b>ENERGY HARVESTING III</b>		
Chairs: Americo Cunha, Abdessattar Abdelkefi		
<b>Pradeep Malaji</b> , Tanmoy Mukhopadhyay	Nonlinear resonator based metastructures for vibration attenuation and energy harvesting	12:15pm – 12:30pm
<b>Wei Wang</b> , Yuling Song	Nonlinear dynamics analysis of electric energy regeneration device based on vibration energy recovery	12:30pm – 12:45pm
<b>Jing Li</b> , Luo Lei, Dong Guan, Hui Shen, Junjie Gong	Dynamic modeling for a mechatronic energy harvesting shock absorbers	12:45pm – 1:00pm
<b>Ning Yu</b> , 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 		Zoom Virtual Room
<b>BIFURCATION AND DYNAMIC INSTABILITY II</b>		
Chairs: Paulo Gonçalves, Houjun Kang		
Julio C. Coaquira, Daniel C.T. Cardoso, <b>Paulo Gonçalves</b> , Diego Orlando	Parametric instability and bifurcation of thin-walled axially compressed long FRP columns	3:30pm – 3:45pm
<b>Guilherme Franzini</b> , Carlos Mazzilli	Numerical studies on the nonlinear dynamics of the Ziegler column under pulsating follower force	3:45pm – 4:00pm
<b>Brian Saunders</b> , Rui Vasconcellos, Robert Kuether, Abdessattar Abdelkefi	Bifurcation analysis of a Duffing oscillator with a multi-segmented freeplay nonlinearity	4:00pm – 4:15pm
Antonio Algaba, <b>Cinta Domínguez Moreno</b> , Manuel Merino, Alejandro J. Rodríguez-Luis	A degenerate double-zero bifurcation in a normal form of Lorenz equations	4:15pm – 4:30pm
<b>Timothy Alvis</b> , 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
<b>Enrique Ponce</b> , 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 		Zoom Virtual Room
<b>COMPUTATIONAL NONLINEAR DYNAMICS III</b>		
Chairs: Harry Dankowicz, Giovanni Formica		
<b>Christopher Marry</b> , Harry Dankowicz, Girish Krishnan	Continuation-based design of self-contacting soft robotic manipulators	3:30pm – 3:45pm
<b>Nikolas Aksamit</b> , George Haller	The organization of boundary layer turbulence with objective momentum transport barriers	3:45pm – 4:00pm
<b>Suguang Dou</b>	An improved tensorial implementation of the incremental harmonic balance method for frequency-domain stability analysis	4:00pm – 4:15pm
<b>Subramanian Ramakrishnan</b> , Heather Harma	Morphological computation using a soft robot: a nonlinear oscillator network model	4:15pm – 4:30pm
<b>Giovanni Formica</b> , Walter Lacarbonara, Franco Milicchio	On the computational efficiency of pseudo-arclength path-following schemes for multi-DOFs dynamical systems	4:30pm – 4:45pm
<b>Piyush Grover</b> , 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 		Zoom Virtual Room
<b>ANALYTICAL TECHNIQUES III</b>		
Chairs: Claude-Henri Lamarque, Brian Feeny		
<b>Emmanuel Gourdon</b> , Alireza Ture Savadkoohi, Claude-Henri Lamarque	Analytical approximation of forced oscillations of nonlinear Helmholtz resonator by homotopy analysis method	3:30pm – 3:45pm
<b>Fatemeh Afzali</b> , Ehsan Kharazmi, Brian Feeny	Resonances of van der Pol equation with parametric damping	3:45pm – 4:00pm
<b>Ashu Sharma</b>	On generalization of resonances in parametrically excited systems	4:00pm – 4:15pm
Ryan Quintana, <b>Samantha Ceballes</b> , Abdessattar Abdelkefi	Vibrations and buckling characteristics of a carbon nanotube embedded in a viscoelastic foundation	4:15pm – 4:30pm
Laura Menini, <b>Corrado Possieri</b> , 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 		Zoom Virtual Room
<b>MECHANICAL SYSTEMS AND STRUCTURES II</b>		
Chairs: Simon Neild, Angelo M. Tusset		
<b>Jose M. Balthazar</b> , Rodrigo T. Rocha, Angelo M. Tusset, Mauricio Ribeiro, Jorge L.P. Felix ( <i>Minikeynote</i> )	Full interaction of a vibrating elastic structure with an energy source of limited power supply	3:30pm – 4:00pm
<b>Alois Steindl</b>	Slow-fast dynamics of an oversteer vehicle	4:00pm – 4:15pm
<b>Maor Farid</b> , Samuel Rudy	Real-Time Data-Driven method for Fatigue Failure Prediction Under Stochastic Loading	4:15pm – 4:30pm
<b>Jacob Barba</b> , 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
<b>Dongxiao Hong</b> , 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 		Zoom Virtual Room
<b>NONLINEAR VIBRATION CONTROL II</b>		
Chairs: Sotirios Natsiavas, Anil Bajaj		
Lance Larsen, <b>Anil Bajaj</b>	Nonlinear dynamics of a pinned-pinned elastic beam with multiple autoparametric vibration absorbers	3:30pm – 3:45pm
<b>Chiara Masnata</b> , 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, <b>Jing Zhao</b>	Control of a chaotic Duffing oscillator to time-varying motions	4:00pm – 4:15pm
<b>Christian Silva</b> , 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
<b>Raphael S. Silva</b> , Thiago Ritto, Marcelo A. Savi	Attenuation of drill-string torsional oscillations using shape memory alloys	4:30pm – 4:45pm
<b>Myrella Cabral</b> , 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 – 5:00pm
Nonlinear dynamics and control 		Zoom Virtual Room
<b>CONTROL OF NONLINEAR SYSTEMS II</b>		
Chairs: Jan Awrejcewicz, Yang Liu		
<b>Eduardo A. Petrocino</b> , 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, <b>Subramanian Ramakrishnan</b>	Dynamics and control of a planar soft robot: A nonlinear oscillator network model	3:45pm – 4:00pm
<b>Erick Espinoza</b> , Jonatan Pena Ramirez	Control and synchronization of underactuated inverted pendulums	4:00pm – 4:15pm
Althea Rustico, Massimiliano Formenti, <b>Nicholas Fantuzzi</b> , Antonio Ferreira	Dynamic actuation model for vibration reduction in offshore cranes	4:15pm – 4:30pm
<b>Iwona Adamiec-Wójcik</b> , Lucyna Brzozowska, Stanisław Wojciech	Influence of sea currents on the strategy of riser re-entry	4:30pm – 4:45pm
<b>Myroslav Sparavalo</b>	Concept of canonical Lyapunov functions in mathematical modelling and control design	4:45pm – 5:00pm

**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

<b>Mohammad Khasawneh,</b> Mohammed Daqaq	An Internally-Resonant Tunable Generator for Wave Energy Harvesting	3:30pm – 3:45pm
<b>Manuel Serrano,</b> Kevin Larkin, Sergei Tretiak, Abdessattar Abdelkefi	Nonlinear investigation on the dynamics and effectiveness of multifunctional energy harvesting gyroscopes	3:45pm – 4:00pm
<b>X.Q. Wang,</b> Yabin Liao, Marc P. Mignolet	Nonlinear reduced order modelling of a buckled piezoelectric beam for energy harvesting	4:00pm – 4:15pm
<b>Tyler Alvis,</b> 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 		Zoom Virtual Room
<b>NONSMOOTH SYSTEMS III</b>		
Chairs: Ivana Kovacic, Valeria Settimi		
<b>Csaba Budai</b> , Mate Antali, Gabor Stepan	Analysis of a friction oscillator with two frictional contacts	5:15pm – 5:30pm
<b>Brian Saunders</b> , Rui Vasconcellos, Robert Kuether, Abdessattar Abdelkefi	Insights on the dynamics of piecewise-smooth oscillators with continuous representations	5:30pm – 5:45pm
<b>Makayla Ley</b> , 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
<b>Dzanko Hajradinovic</b> , 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 		Zoom Virtual Room
<b>NONLINEAR WAVES I</b>		
Chairs: Muahmmad Hajj, Patrizia Trovalusci		
<b>Vamsi Meesala</b> , Muhammad R. Hajj, Shima Shahab	Investigation on the shock formation in acoustic energy transfer systems	5:15pm – 5:30pm
<b>Stefano Lenci</b> , Francesco Clementi	Wave motion in a beam on a tensionless foundation	5:30pm – 5:45pm
<b>Annamaria Pau</b> , Patrizia Trovalusci, Marco Pingaro	A multifield continuum model for the description of wave propagation in microcracked composite-material plate waveguides	5:45pm – 6:00pm
<b>Nebojsa Dedovic</b>	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, <b>Evangelos Koutras</b> , Elias Paraskevopoulos	Co-simulation in mechanical systems with nonlinear components	5:15pm – 5:30pm
Jonathas Pereira, Renata Soares, <b>Frederico Silva</b> , 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, <b>Americo Cunha Jr</b>	A mechanical model for the non-linear dynamics of a cable-car system	5:45pm – 6:00pm
<b>Marek Metelski</b> , Iwona Adamiec-Wójcik, Łukasz Drąg, Stanisław Wojciech	Application of RFEM to modeling dynamics of lattice boom offshore cranes	6:00pm – 6:15pm
<b>Walter Wedig</b>	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, Giuseppe Ruta

Olga Ganilova, <b>Matthew Cartmell</b> , Andrew Kiley	The development of a coupled dynamic model for thermoelastically loaded aluminium composite sandwich plates for satellite applications	5:15pm – 5:30pm
<b>Giulia Lanzara</b>	Dynamic morphing of a rolling material	5:30pm – 5:45pm
<b>Mason Curtin</b> , Makayla Ley, Megan Trujillo, Brian Saunders, Glen Throneberry, Abdessattar Abdelkefi	Nonlinear orthotropic modeling and analysis of additively manufactured systems	5:45pm – 6:00pm
<b>Giulia Lanzara</b>	Characterization of morphing nanocomposites under a quasi-static and impulsive magnetic field	6:00pm – 6:15pm
<b>Sinem Mizrak</b> , 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 		Zoom Virtual Room
<b>MEMS/NEMS II</b>		
Chairs: Eihab Abdel-Rahman, Laura Ruzziconi		
<b>Dumitru Caruntu</b> , Ezequiel Juarez	Amplitude-voltage response of parametric resonance electrostatically actuated DWCNT resonators	5:15pm – 5:30pm
<b>Kaio Benedetti</b> , Paulo Gonçalves	Nonlinear response of an imperfect microcantilever static and dynamic actuated considering noise	5:30pm – 5:45pm
<b>Amal Hajjaj</b> , Jonathan Ortiz, Abdessattar Abdelkefi	Size dependent and material structure coupling effects on the dynamics of nanocrystalline arc resonators	5:45pm – 6:00pm
<b>Navid Heidari</b> , Ayman Alneamy, Walter Lacarbonara, Eihab Abdel-Rahman	Single Input Single Output MEMS gas sensor	6:00pm – 6:15pm
<b>Carlo Famoso</b> , 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
Recent trends in nonlinear dynamics 		Zoom Virtual Room
<b>FRACTIONAL ORDER SYSTEM I</b>		
Chairs: Andrea Arena, Biagio Carboni		
<b>Muhammad Shamrooz Aslam</b> , Irfan Qaisar	Design of sliding mode controller for the estimation of sensor/actuator fault with unknown input observer for satellite control system	5:15pm – 5:30pm
<b>Carlos Sánchez-López</b>	Generating fractional-order chaotic waveforms considering performance parameters of active devices	5:30pm – 5:45pm
<b>Hui Ren</b> , Tengfei Yuan, Kai Yang	Dynamics of Flexible Electric Solar Wind Sails	5:45pm – 6:00pm
<b>Xiumin Gao</b> , Haojie Liu	Nonlinear dynamic analysis of a rigid-flexible antenna system with internal resonances	6:00pm – 6:15pm

DAY 2 – Wednesday, February 17, 2021		5:15pm – 6:15pm
Special Session 		Zoom Virtual Room
<b>COMPLEX DYNAMICS OF COVID-19: MODELING, PREDICTION AND CONTROL II</b>		
Chairs: YangQuan Chen, Bala Balachandran		
<b>Yasser Aboelkassem</b> , Haithem Taha	A cooperative epidemiological model of infectious disease dynamics: a COVID-19 case study	5:15pm – 5:30pm
<b>Carla Pinto</b> , Jose Machado	Adapted SIQR model for the dynamics of SARS-CoV-2 infection	5:30pm – 5:45pm
<b>Khyar Omar</b> , Allali Karam	Dynamic analysis of a three-strain COVID-19 SEIR epidemic model with general incidence rates	5:45pm – 6:00pm
<b>Ivan Gandzha</b> , 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 		Zoom Virtual Room
<b>NONSMOOTH SYSTEMS IV</b>		
Chairs: Pierangelo Masarati, David Roze		
<b>Huimin Zhang</b> , Runsen Zhang, Andrea Zaroni, Pierangelo Masarati	A generalized solution scheme using an implicit time integrator for piecewise linear and nonlinear systems	9:00am – 9:15am
Antoine Falaize, <b>David Roze</b>	A generic passive-guaranteed structure for elastoplastic friction models	9:15am – 9:30am
<b>Wei Dai</b> , Jian Yang	Vibration analysis of a multi-DOF impact oscillator with multiple linear constraints	9:30am – 9:45am
<b>Dali Lv</b> , 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 		Zoom Virtual Room
<b>COMPUTATIONAL NONLINEAR DYNAMICS IV</b>		
Chairs: Franco Milicchio, Mate Antali		
<b>Carlos Argáez</b> , 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, <b>Alejandro J. Rodríguez-Luis</b>	High-order approximation of global connections in planar system with the nonlinear time transformation method	9:15am – 9:30am
<b>Bao Rong</b> , Xiaoting Rui, Guoping Wang, Ling Tao	Dynamics analysis of flexible beam systems with stochastic uncertainty and thermal coupling effect	9:30am – 9:45am
<b>Zigang Li</b> , 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 – 10:15am
Concepts and methods in nonlinear dynamics		Zoom Virtual Room
<b>NONLINEAR WAVES II</b>		
Chairs: Sandra Carillo, Denis Bonheure		
<b>Peng Ningning</b> , 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
<b>Qing Pan</b> , 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
<b>Ran Wang</b> , Hu Ding, Yuan XueGang, Na Lv, Li-Qun Chen	Nonlinear singular travelling waves in a compressible thermo-hyperelastic cylindrical shell	9:30am – 9:45am
<b>Shibam Manna</b> , A. K. Dhar	Effect of vorticity on peregrine breather for interfacial waves of finite amplitude	9:45am – 10:00am
<b>Hui Wang</b>	The influence of wave propagation on impact dynamics of repeated impacts on beams	10:00am – 10:15am

DAY 3 – Thursday, February 18, 2021		9:00am – 10:15am
Concepts and methods in nonlinear dynamics		Zoom Virtual Room
<b>MULTI BODY SYSTEMS</b>		
Chairs: Zdravko Terze, Dan Negrut		
<b>Friedrich Pfeiffer</b>	On the mobility of a robot-trajectory process	9:00am – 9:15am
<b>Simone Benatti</b> , 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, <b>Viktor Pandža</b> , Dario Zlatar	Reduced coupled multibody fluid system dynamics in Lie group setting	9:30am – 9:45am
<b>Alfonso García-Agúndez Blanco</b> , Daniel Garca Vallejo, Emilio Freire	Linear stability analysis of a bicycle multibody model with toroidal wheels	9:45am – 10:00am
<b>Paulo Flores</b>	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  		Zoom Virtual Room
<b>CONTROL OF NONLINEAR SYSTEMS III</b>		
Chairs: Anton Belyakov, Arnaldo Casalotti		
<b>Arnaldo Casalotti</b> , Francesco D'Annibale	Piezoelectric control of the Hopf bifurcation of the visco-elastic Beck beam	9:00am – 9:15am
<b>Na Dong</b> , Zhiqiang Wu, Yu Feng, Zhongke Gao, Celso Grebogi	Model-free adaptive control strategy for the temperature tracking control of Single-Effect LiBr/H <sub>2</sub> O absorption chiller	9:15am – 9:30am
<b>Nikolay Bolotnik</b> , Tatiana Figurina	Controllability of a two-body limbless crawler on an inclined rough plane	9:30am – 9:45am
<b>Srimanta Lal De</b> , Shaikh Faruque Ali	A study on control of chaotic system	9:45am – 10:00am
<b>Andrei Bukh</b> , Galina Strelkova, Vadim Anishchenko	Synchronization features of spiral and target wave structures	10:00am – 10:15am


DAY 3 – Thursday, February 18, 2021		9:00am – 9:30am
Nonlinear dynamics and control  		Zoom Virtual Room
<b>NETWORKS SYNCHRONIZATION</b>		
Chair: Giuseppe Quaranta		
<b>Alexander Pesterev</b> , Ivan Matrosov, Yuri Morozov	Stabilizing a Pendulum-driven Robot–wheel Subject to Control and Phase Constraint	9:00am – 9:15am
<b>Lixin Yang</b> , Meng-meng Du	Analysis of dynamic resilience for oscillatory coupled network via phase difference	9:15am – 9:30am

DAY 3 – Thursday, February 18, 2021		9:00am – 10:15am
Special Session  		Zoom Virtual Room
<b>COMPLEX DYNAMICS OF COVID-19: MODELING, PREDICTION AND CONTROL III</b>		
Chair: J. Tenreiro Machado, Walter Lacarbonara		
<b>Xianbo Liu</b> , Guang Meng, Bala Balachandran	Multi-phase dynamics of COVID-19 and data-driven forecasts	9:00am – 9:15am
<b>Rohith G</b> , K. B. Devika	Dynamics and impact of quarantine compartments in the control of COVID-19 spread	9:15am – 9:30am
<b>Guojian Ren</b> , Yongguang Yu, Xiangyun Meng	A stochastic heterogeneous node-based generalized SIR model in switching network for COVID-19	9:30am – 9:45am
<b>Yamin Ding</b> , Yanmei Kang	Dynamical analysis of a COVID-19 epidemic model with social confinement and acquired immunity loss	9:45am – 10:00am
<b>Ms Nilam</b> , Mrs Swati	Fractional order SIR epidemic model for COVID-19	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 		Zoom Virtual Room
<b>CHAOTIC SYSTEMS AND UNCERTAINTY II</b>		
Chairs: Anton Krysko, Paul Meehan		
<b>Paul Meehan</b>	Investigation of chaotic instability in brake squeal	10:30am – 10:45am
<b>Derek Cyrus Gomes, G. Ambika</b>	Frequency locking, quasi-periodicity and chaos due to special relativistic effects	10:45am – 11:00am
<b>Wei Li, Li Mengyang, Huang Dongmei, Yang Guidong, Natasa Trisovic</b>	The statistical response of a three-dimensional REE model with random noise	11:00am – 11:15am
<b>Biswarup Bhattacharyya, Eric Jacquelin, Denis Brizard</b>	A surrogate approach for stochastic modeling of a crash box under impact loading in the time domain	11:15am – 11:30am
<b>Evgeniya Pankratova</b>	Environmentally induced chaos and amplitude death in neuronal network activity	11:30am – 11:45am
<b>Irina Papkova, Tatyana Tatyana, Vadim Krysko, Anton Krysko</b>	Chaos type identification in the contact interaction of closed cylindrical nanoshells embedded one into another with a gap between them.	11:45am – 12:00pm

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

Nonlinear dynamics of mechanical and structural systems

**SYSTEM IDENTIFICATION AND SHM III**

Zoom Virtual Room

Chairs: Mohammad Younis, Dario De Domenico

<b>Sandor Beregi</b> , 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
<b>Qinghua Liu</b> , Fangyuan Hu, Junyi Cao, Xingjian Jing	Nonlinear restoring force subspace identification of negative stiffness nonlinear oscillators	10:45am – 11:00am
<b>Manuel Pinto</b> , 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
<b>Marzieh Ghani</b> , Afshin Banazadeh	Accurate model identification of quadcopters with moments of inertia uncertainty and time delay	11:15am – 11:30am
<b>Shuixiu Lu</b> , Sebastian Oberst, Zongwei Luo	Recurrence plots and order patterns to identify the amplitude death in neural networks	11:30am – 11:45am

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

Nonlinear dynamics of mechanical and structural systems

**MULTIFUNCTIONAL STRUCTURES II**

Zoom Virtual Room

Chairs: Francesco Pellicano, Yan Qing Wang

<b>MeiWen Teng</b> , Yan Qing Wang ( <i>Minikeynote</i> )	Nonlinear forced vibration of metal foam rectangular plates reinforced with graphene platelets	10:30am – 11:00am
<b>Giulia Lanzara</b> , Antonio Loisi, Federico Fabriani, Edoardo Bemporad	Motion and interaction of magnetic particles for advanced materials	11:00am – 11:15am
<b>Sawan Kumar Guruva</b>	Nonlinear damping characteristic of nanocomposite beams via dynamical analysis	11:15am – 11:30am
<b>Aleksandra Gawlik</b> , Andrzej Klepka, Vsevolod Vladimirov, Sergii Skurativskiy	Forced transversal vibrations of von Karman plates with distributed spring-masses	11:30am – 11:45am

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

Nonlinear dynamics of mechanical and structural systems

**ROTATING SYSTEMS II**

Zoom Virtual Room

Chairs: Stephanos Theodossiades, C. Nat Nataraj

<b>Bo Zhang, Hu Ding, Li-Qun Chen</b>	Internal resonances of a rotating pre-deformed blade under a harmonic gas pressure	10:30am – 10:45am
<b>Eugen Kremer</b>	Stochastic resonances and antiresonances in rotating mechanisms	10:45am – 11:00am
<b>Shibo Zhao, Xingmin Ren, Kuan Lu, Yongfeng Yang</b>	A Precise Balancing Technology of the Rotor System Based on Multi Modal Analysis	11:00am – 11:15am
<b>Tariq Alzarooni, Mohammad Al-Shudeifat</b>	Post-resonance backward whirl analysis of accelerating cracked overhung rotor system using fatigue crack model	11:15am – 11:30am
<b>Kuan Lu, Haopeng Zhang, Shibo Zhao, Yongfeng Yang</b>	A Transient Characteristic-based Balancing Method of Rotor System without Trail Weights	11:30am – 11:45am
<b>Jun Jiang</b>	Self-excited Oscillations with Two different Mechanisms in A Piecewise Smooth nonlinear Rotor/Stator Rubbing System	11:45am – 12:00pm

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

Nonlinear dynamics and control

**NONLINEAR VIBRATION CONTROL III**

Zoom Virtual Room

Chairs: Hiroshi Yabuno, Ugo Andreaus

<b>Enora Denimal, Ludovic Renson, Loïc Salles</b>	Topological optimisation of friction dampers for nonlinear resonance mitigation	10:30am – 10:45am
<b>Noriyuki Tamaki, Hiroshi Yabuno</b>	Nonlinear Stabilization of Hunting Motion of Railway Wheelset by Gyro-scopic Damper	10:45am – 11:00am
<b>Giulia Stefani, Maurizio De Angelis, Ugo Andreaus</b>	Preliminary experimental study on the influence of the gap in a vibro-impact system with two-sided constraints	11:00am – 11:15am
<b>Zhuang Dong, Jian Yang, Dimitrios Chronopoulos</b>	Suppression of vibration transmission between oscillators coupled with a nonlinear inerter-based joint	11:15am – 11:30am
<b>Yiwei Zhao, Yongqiang Liu, Shaopu Yang</b>	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
<b>Santhosh B, Rony Philip, Bipin Balaram</b>	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, <b>Ranjit Kumar Upadhyay</b>	Modeling the fear induced spatiotemporal dynamics of three-species agroecosystems	10:30am – 10:45am
<b>Manoj Kumar</b> , Syed Abbas	Optimal control in a size structured population model with time dependent diffusion rate	10:45am – 11:00am
<b>J. Leonel Rocha</b> , Abdel-Kaddous Taha	Nonlinear dynamics and bifurcation analysis of homographic Ricker maps	11:00am – 11:15am
<b>Lukasz Plociniczak</b>	Relaxation-oscillations in a conceptual climate model	11:15am – 11:30am
Taqseer Khan, <b>Harindri Chaudhary</b>	Compound difference anti-synchronization in generalized lotka-volterra biological systems via active control method	11:30am – 11:45am
<b>Giuseppe Orlando</b>	Simulating corporate dynamics via the Rulkov map	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 – 1:15pm
Concepts and methods in nonlinear dynamics 		Zoom Virtual Room
<b>FLUID-STRUCTURE INTERACTION V</b>		
Chair: Giuseppe Ruta		
<b>Heng Su</b> , Junxian Zhang, Fangtao Xie, Yegao Qu, Zhike Peng	Modelling and analysis of nonlinear vibration and noise for elastic pipes conveying fluid with frictional supports	12:15pm – 12:30pm
<b>Miroslav Byrtus</b>	Model of non-synchronous vibration and frequency lock-in in coupled structures	12:30pm – 12:45pm
<b>Caishan Liu</b>	Self-excited vibration of a rotating disk	12:45pm – 1:00pm
<b>Henrik Skyvulstad</b> , Ole Øiseth	Nonlinear aerodynamic self-excited force modelling with higher-order convolutions	1:00pm – 1:15pm

DAY 3 – Thursday, February 18, 2021		12:15pm – 1:15pm
Concepts and methods in nonlinear dynamics 		Zoom Virtual Room
<b>TRANSIENT DYNAMICS</b>		
Chairs: Oleg Gendelman, Emmanuel Gourdon		
<b>Attila Genda</b> , Alexander Fidlin, Oleg Gendelman	On the escape of a resonantly excited couple of particles from a potential well	12:15pm – 12:30pm
<b>Zhifu Cao</b> , Dong Jiang, Qingguo Fei, Rakesh K. Kapania, Hui Jin, Rui Zhu	Dynamic sensitivity analysis of transient responses for nonlinear structures	12:30pm – 12:45pm
<b>Kevin Dekemele</b> , 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
<b>Haopeng Zhang</b> , Kuan Lu, Yulin Jin, Yongfeng Yang	The transient POD method based on minimum error of bifurcation parameter	1:00pm – 1:15pm

DAY 3 – Thursday, February 18, 2021		12:15pm – 1:00pm
Concepts and methods in nonlinear dynamics 		Zoom Virtual Room
<b>ANALYTICAL TECHNIQUES IV</b>		
Chairs: David Wagg, Andrea Arena		
<b>Meng-Hsuan Tien</b> , Kiran D'Souza	Analysis of general piecewise-linear nonlinear systems using a hybrid analytical-numeric computational method	12:15pm – 12:30pm
<b>Eric Howard</b>	Nonlinear aspects of one-dimensional supersymmetry	12:30pm – 12:45pm
<b>Pavel Udalov</b> , 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


DAY 3 – Thursday, February 18, 2021		12:15pm – 1:00pm
Nonlinear dynamics of mechanical and structural systems 		Zoom Virtual Room
<b>MODAL INTERACTIONS AND ENERGY TRANSFER II</b>		
Chairs: Mohammad Younis, Houjun Kang		
<b>Feras Alfosail</b> , Mohammad Younis	Modal interactions of inclined marine riser under vortex induced vibrations	12:15pm – 12:30pm
<b>Xiaoyang Su</b> , Houjun Kang	Modelling and nonlinear dynamic analysis of a cable considering the vibration of a damper	12:30pm – 12:45pm
<b>Aravindan Muralidharan</b> , 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 		Zoom Virtual Room
<b>MEMS/NEMS III</b>		
Chairs: Farbod Alijani, Attilio Frangi		
<b>Nir Dick</b> , Slava Krylov	Analysis of pattern switching in an array of micro cantilevers under parametric electrostatic excitation	12:15pm – 12:30pm
<b>Andrea Opreni</b> , Attilio Frangi	Full-order frequency-domain simulations of nonlinear piezoelectric MEMS	12:30pm – 12:45pm
<b>Vasilisa Igumnova</b> , Lev Shtukin, Alexey Lukin, Ivan Popov	Model of a micromechanical accelerometer based on the phenomenon of modal localization	12:45pm – 1:00pm
<b>Nadezhda Mozhgova</b> , 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 		Zoom Virtual Room
<b>METAMATERIALS I</b>		
Chairs: Michael Leamy, Andrea Bacigalupo		
Ada Amendola, Marco Miniaci, Fernando Fraternali, <b>Luca Placidi</b>	Heuristic homogenization for bandgap bi-atomic mass-spring systems and application to tensegrity meta-structure	12:15pm – 12:30pm
<b>Kyriakos Alexandros Chondrogiannis</b> , Vasilis Dertimanis, Boris Jeremic, Eleni Chatzi	On the vibration attenuation properties of metamaterial design using negative stiffness elements	12:30pm – 12:45pm
Valeria Settimi, <b>Marco Lepidi</b> , Andrea Bacigalupo	Nonlinear wave propagation in metamaterial waveguides with inertia amplification	12:45pm – 1:00pm
<b>Chang Quan Lai</b>	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 		Zoom Virtual Room
<b>CHAOTIC SYSTEMS AND UNCERTAINTY III</b>		
Chairs: Tieding Guo, Arturo Buscarino		
<b>Carlo Famoso</b> , Maide Bucolo, Arturo Buscarino, Luigi Fortuna, Salvina Gagliano	High frequency chaotic behavior in non-ideal operational amplifiers	3:30pm – 3:45pm
<b>Luis Eduardo Reyes-López</b> , José Murguía, H. González-Aguilar, H.C. Rosu	Scaling wavelet analysis of chaotic systems	3:45pm – 4:00pm
<b>Marcelo Messias</b> , Alisson de Carvalho Reinol	Dynamical analysis of a Memristor-Inductor-Capacitor (MLC) nonlinear circuit	4:00pm – 4:15pm
<b>Luis Javier Ontanon-Garcia</b> , 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
<b>Carlo Famoso</b> , Maide Bucolo, Arturo Buscarino, Luigi Fortuna, Salvina Gagliano	Multi-jump resonance in a class of oscillators with nonic polynomial nonlinearity	4:30pm – 4:45pm
<b>Jonatan Pena Ramirez</b>	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 		Zoom Virtual Room
<b>COMPUTATIONAL NONLINEAR DYNAMICS V</b>		
Chairs: Jan Awrejcewicz, Annalisa Fregolent		
<b>Francesco Latini</b> , Jacopo Brunetti, Walter D'Ambrogio, Annalisa Fregolent	Nonlinear dynamic substructuring with localized nonlinearities	3:30pm – 3:45pm
<b>Suguang Dou</b>	An improved formulation for structural optimization of nonlinear dynamic response	3:45pm – 4:00pm
<b>Paolo Di Re</b> , Daniela Addessi, Cristina Gatta	Enriched Vlasov beam model for nonlinear dynamic analysis of thin-walled structures	4:00pm – 4:15pm
<b>Tetyana Shmatko</b> , Lidiya Kurpa, Jan Awrejcewicz	Nonlinear vibration of functionally graded shallow shells resting on elastic foundations	4:15pm – 4:30pm
<b>Carlos Argáez</b> , Peter Giesl, Sigurdur Freyr Hafstein	WendlandXool: Simplified C++ code to compute Wendland functions	4:30pm – 4:45pm

<b>DAY 3 – Thursday, February 18, 2021</b>	<b>3:30pm – 4:45pm</b>
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Concepts and methods in nonlinear dynamics

**NONLINEAR WAVES III**

Zoom Virtual Room

Chairs: Sandra Carillo, Harold Blas

<b>Sandra Carillo</b> , Cornelia Schiebold	Construction of soliton solutions of the matrix Korteweg-de Vries and modified Korteweg-de Vries equations	3:30pm – 3:45pm
<b>Piotr Rozmej</b> , Anna Karczewska	KdV, extended KdV, 5th-order KdV and Gardner equations generalized for uneven bottom versus corresponding Boussinesq's equations	3:45pm – 4:00pm
<b>Ivan Gandzha</b> , Yuri Sedletsky	A multi-time Hamiltonian approach to the derivation of a high-order nonlinear Schrödinger equation for the envelope of slowly modulated wave trains	4:00pm – 4:15pm
<b>Harold Blas</b> , Martin Cerna, Luis Fernando dos Santos	Modified non-linear Schrödinger models, CPT symmetry and anomalous charges	4:15pm – 4:30pm
<b>Dimitrios Chronopoulos</b>	Guided wave interaction with nonlinearities and generation of harmonics in complex structures	4:30pm – 4:45pm

<b>DAY 3 – Thursday, February 18, 2021</b>	<b>3:30pm – 4:30pm</b>
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Concepts and methods in nonlinear dynamics

**BIFURCATION AND DYNAMIC INSTABILITY IV**

Zoom Virtual Room

Chair: Biagio Carboni

Quan Qang, <b>Chanh Kieu</b>	Hopf Bifurcations and Transitions of Two-Dimensional Quasi-Geostrophic Flows	3:30pm – 3:45pm
<b>Arnab Basak</b>	The effects of gravity modulation on Rayleigh-Banard magnetoconvection	3:45pm – 4:00pm
<b>Wieslaw Marszalek</b> , Maciej Walczak, Jan Sadecki	Two-parameter 0-1 test and sample entropy bifurcation diagrams for nonlinear oscillating systems	4:00pm – 4:15pm
<b>Denis Goldobin</b> , Irina Tyulkina, Lyudmila Klimenko, Arkady Pikovsky	Generalization of the Ott-Antonsen theory: circular cumulant approach	4:15pm – 4:30pm

<b>DAY 3 – Thursday, February 18, 2021</b>	<b>3:30pm – 4:45pm</b>
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Nonlinear dynamics of mechanical and structural systems


**EXPERIMENTAL DYNAMICS II**

Zoom Virtual Room

Chairs: Michael Leamy, Abdessattar Abdelkefi


<b>Lezheng Fang</b> , 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, <b>Vamsi Meesala</b> , Muhammad R. Hajj, Shima Shahab	Experimental analysis of a high-intensity focused ultrasound power transfer system	3:45pm – 4:00pm
<b>Hunter Sedillo</b> , Abdessattar Abdelkefi, Kaleb Jankowski, Adam Takeshita, Adam Bouma, Jacob Barba	Numerical and experimental investigations on bolted connections of BARC structures	4:00pm – 4:15pm
<b>Rafal Radecki</b> , Michael Leamy, Pawel Packo, Andrzej Klepka	Investigation of shear wave interaction at a frictional hysteretic interface	4:15pm – 4:30pm
<b>Xin Xue</b> , Guojian Shen, Min Li, Hongbai Bai	Nonlinear dynamic characteristics of bellow structure covered with elastic-porous metal-rubber	4:30pm – 4:45pm


DAY 3 – Thursday, February 18, 2021		3:30pm – 5:00pm
Nonlinear dynamics and control 		Zoom Virtual Room
<b>NONLINEAR VIBRATION CONTROL IV</b>		
Chairs: Jose M. Balthazar, Mary Lanzerotti		
<b>Austin Morock</b> , Andrea Arena, Mary Lanzerotti, Jacob Capps, Walter Lacarbonara, Thomas Aldhizer	Variable length sling load hoisting control method	3:30pm – 3:45pm
<b>Eduardo Ribeiro</b> , Carlos Mazzilli, Breno Mendes	Stabilisation of unstable responses on a heavy-chain model by means of parametric excitation	3:45pm – 4:00pm
<b>Anderson Langone Silva</b> , Marcus Varanis, Eduardo M. O. Lopes, Jose M. Balthazar, Carlos Alberto Bavastri	Suppression of Sommerfeld effect on a cantilever beam through a viscoelastic dynamic neutralizer	4:00pm – 4:15pm
<b>Hélio Cruz Neto</b> , Marcelo Trindade	A novel methodology for controlling stick-slip vibrations in drill-strings	4:15pm – 4:30pm
<b>Elena Adomaitienė</b> , 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
<b>Daniil Yurchenko</b> , 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 – 5:00pm
Recent trends in nonlinear dynamics 		Zoom Virtual Room
<b>STOCHASTICITY AND NOISE II</b>		
Chairs: George Haller, Bala Balachandran		
<b>Balint Kaszas</b> , George Haller	Universal upper estimate for prediction errors under moderate model uncertainty	3:30pm – 3:45pm
<b>Vipin Agarwal</b> , Bala Balachandran	From chaotic dynamics to periodic dynamics: noise assisted response steering	3:45pm – 4:00pm
<b>Alexis-Tzianni Charalampopoulos</b> , Themistoklis Sapsis	Physically informed data-based closure schemes for turbulent systems	4:00pm – 4:15pm
<b>Abdulrahman Alofi</b> , Gizem Acar, Bala Balachandran	Noise influenced dynamics of two coupled oscillators	4:15pm – 4:30pm
<b>Dario De Domenico</b> , Giuseppe Quaranta, Giuseppe Ricciardi, Walter Lacarbonara	Optimal design and seismic performance of nonlinear TMD with pinched hysteresis	4:30pm – 4:45pm
<b>Shengli Chen</b> , Wu Zhiqiang	A new method for characterizing the joint probability density based on contour lines	4:45pm – 5:00pm


## 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 		Zoom Virtual Room
<b>FLUID-STRUCTURE INTERACTION III</b>		
Chairs: David Barton, Andrea Arena		
<b>Daniele Zulli</b> , Giuseppe Piccardo, Angelo Luongo	A continuum model of flexible cable for nonlinear bifurcation analysis from a non-trivial fundamental path	5:15pm – 5:30pm
<b>Kyoung Hyun Lee</b> , David Barton, Ludovic Renson	Reduced-order modelling of flutter oscillations in an aero-elastic system using scientific machine learning	5:30pm – 5:45pm
<b>Marten Hollm</b> , Leo Dostal, Robert Seifried	Hydrodynamic forces acting on cylindrical piles subjected to wind forced nonlinear water waves	5:45pm – 6:00pm
<b>Antonio Papangelo</b> , 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 		Zoom Virtual Room
<b>REDUCED-ORDER MODELS II</b>		
Chairs: Cyril Touzé, George Haller		
<b>Shobhit Jain</b> , George Haller	Computation of spectral submanifolds and forced response in high-dimensional nonlinear mechanical systems	5:15pm – 5:30pm
<b>Yichang Shen</b> , 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
<b>Evangelia Nicolaidou</b> , Thomas Hill, Simon Neild	Conserving kinetic energy while identifying nonlinear reduced-order models	5:45pm – 6:00pm
<b>Samantha Ceballes</b> , Abdessattar Abdelkefi	Investigations on the nonlinear forced responses of nanobeams modeled with the general nonlocal theory	6:00pm – 6:15pm
Andrea Opreni, <b>Alessandra Vizzaccaro</b> , 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 		Zoom Virtual Room
<b>ANALYTICAL TECHNIQUES V</b>		
Chairs: Ivana Kovacic, Enrique Ponce		
<b>Ashu Sharma</b>	A new technique for the approximate analysis of quasi-periodic systems	5:15pm – 5:30pm
<b>Jose S. Canovas</b> , María Muñoz Guillermo	$q$ -deformations of logistic family	5:30pm – 5:45pm
<b>Loredana Flavia Vesa</b> , Mihaela Neamtu	Global stability analysis of an unemployment model with two distributed time delays	5:45pm – 6:00pm
Paulo Gomes, Nuno Franco, <b>Luis Silva</b>	Classification of a family of Lorenz knots with reducible symbolic dynamics	6:00pm – 6:15pm
<b>Javier Ros</b> , 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 – 6:30pm
Nonlinear dynamics of mechanical and structural systems 		Zoom Virtual Room
<b>MECHANICAL SYSTEMS AND STRUCTURES IV</b>		
Chairs: James Gibert, David Wagg		
<b>Nidish Narayanaa Balaji</b> , Matthew R. W. Brake	Nonlinear modal analysis through the generalization of the eigenvalue problem: applications for dissipative dynamics	5:15pm – 5:30pm
Francesco Danzi, James Gibert	Nonlinear and Nonplanar Dynamics of Double-Tapered Beams	5:30pm – 5:45pm
<b>Fotios Georgiades</b>	Augmented perpetual manifolds of mechanical systems	5:45pm – 6:00pm
<b>Marek Metelski</b> , Łukasz Drąg, Stanisław Wojciech	Dynamic models of the cranes applied to offshore wind farm service	6:00pm – 6:15pm
Uğurcan Eroğlu, <b>Giuseppe Ruta</b>	Perturbations for non-local elastic vibration of circular arches	6:15pm – 6:30pm



**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, <b>C. Nataraj</b>	Proper and smooth orthogonal decompositions for detection of gear system defects in rotating machinery	5:15pm – 5:30pm
Alex Binder, <b>Micah Cheng-Guajardo</b> , 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
<b>Rodrigo T. Rocha</b> , Feras Alfosail, Wen Zhao, Mohammad Younis, Sami F. Masri	Nonparametric identification of a nonlinear MEMS resonator	5:45pm – 6:00pm
<b>Diego Matos S. L.</b> , Americo Cunha Jr	On the physical consistency of evolution laws obtained with sparse regression	6:00pm – 6:15pm
<b>Federica Mezzani</b> , 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, <b>Dimosthenis Tsalagradas</b> , Jiyuan Tian, Jiajia Zhang, Bingyong Guo	Investigation of force magnification for the vibro-impact capsule system using FEA	5:15pm – 5:30pm
<b>Jiyuan Tian</b> , Yang Liu, Bingyong Guo, Shyam Prasad	Finite element modelling of a vibro-impact capsule moving in the small intestine	5:30pm – 5:45pm
<b>Yang Liu</b> , Joseph Pérez Chávez, Jiajia Zhang, Jiyuan Tian, Bingyong Guo, Shyam Prasad	Optimisation verification for a millimetre-scale vibro-impact capsule system	5:45pm – 6:00pm
<b>Jiajia Zhang</b> , 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, <b>Joseph Pérez Chávez</b> , 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


<b>Martin Garrad</b> , Ludovic Renson, Helmut Hauser	Nonlinear dynamics of a synthetic spider web	5:15pm – 5:30pm
<b>Fanni Kádár</b> , Gabor Stepan	Supercritical Hopf bifurcation in valve dynamics	5:30pm – 5:45pm
<b>Ehsan Askari</b> , Michael S. Andersen	A forward dynamics methodology to study nonlinear dynamics and wear of total knee arthroplasties	5:45pm – 6:00pm
<b>Hina Shaheen</b> , Sundeep Singh, Roderick Melnik	Mathematical modeling of calcium-mediated exosomal dynamics in neural cells	6:00pm – 6:15pm
<b>Shady Ahmed</b> , 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 		Zoom Virtual Room
<b>MULTISTABLE OSCILLATORS</b>		
Chairs: Sebastien Baguet, Xugang Hua		
<b>Ayman Nasir</b> , Neil Sims, David Wagg	Exploring the dynamics of viscously damped nonlinear oscillators via damped backbone curves: A normal form approach	9:00am – 9:15am
<b>Ma Wensai</b> , Zhang Wei	Complex dynamics of a bi-stable asymmetric laminated composite square panels	9:15am – 9:30am
<b>Vaibhav Tandel</b> , Jayaprakash K R	Dynamics of escape from a magnetic double-well potential	9:30am – 9:45am
<b>Ilham Kirrou</b> , Mohamed Belhaq	Quasiperiodic stability in nonlinear delayed coupled oscillators	9:45am – 10:00am

DAY 4 – Friday, February 19, 2021		9:00am – 10:00am
Nonlinear dynamics of mechanical and structural systems 		Zoom Virtual Room
<b>MECHANICAL SYSTEMS AND STRUCTURES V</b>		
Chair: Biagio Carboni		
<b>Hossein Bakhshi Khaniki</b> , Mergen Ghayesh, Rey Chin, Marco Amabili	Nonlinear mechanics of axially moving soft belts on an elastic foundation	9:00am – 9:15am
<b>Fei Liu</b> , Quan Hu, Lei Liu, Xiaohui Li, Weihui Liu, Wen Wen, Jingchao Zhao	Kinematics and dynamics of parallel space robot for debris capturing	9:15am – 9:30am
<b>Oscar Zi Shao Ong</b> , Mergen Ghayesh	Vibrations of a Clamped-Free Double Microbeam Interconnected via a Single Spring	9:30am – 9:45am
<b>Alexander Prokopenya</b>	On Dynamic Equilibrium of the Swinging Atwood Machine	9:45am – 10:00am

DAY 4 – Friday, February 19, 2021		9:00am – 9:45am
Nonlinear dynamics of mechanical and structural systems 		Zoom Virtual Room
<b>MULTIFUNCTIONAL STRUCTURES III</b>		
Chairs: Annamaria Pau, Valeria Settimi		
<b>Ma Wensai</b> , Zhang Wei	Complex Dynamics of a Bistable Asymmetric Laminated Composite Square Panel	9:00am – 9:15am
<b>Yaze Liu</b> , Zhang Wei, Meiqi Wu	Dynamic Snap-through of Graphene-reinforced Bistable Composite Laminates	9:15am – 9:30am
<b>Yan Niu</b> , Minghui Yao, Zhang Wei	Nonlinear vibrations of rotating pre-twisted variable thickness composite blades containing graphene reinforced composite layers	9:30am – 9:45am

DAY 4 – Friday, February 19, 2021		09:00am – 10:15am
Recent trends in nonlinear dynamics 		Zoom Virtual Room
<b>MEMS/NEMS IV</b>		
Chairs: Anton Krysko, Alexey Lukin		
Irina Papkova, Tatyana Tatyana, <b>Vadim Krysko</b> , 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
<b>Alexey Lukin</b> , 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
<b>Ekaterina Zavorotneva</b> , Alexey Lukin, Ivan Popov	Dynamics of disk-based MEMS Coriolis vibrating gyroscope	09:30am – 09:45am
<b>Uğurcan Eroğlu</b>	Approximate solutions to axial vibrations of nanobars in nonlinear elastic medium	09:45am – 10:00am
<b>Sasan Rahmanian</b> , Masoud Rezaei	A sensitive acoustic MEMS transducer	10:00am – 10:15am

DAY 4 – Friday, February 19, 2021		09:00am – 10:15am
Recent trends in nonlinear dynamics 		Zoom Virtual Room
<b>METAMATERIALS II</b>		
Chairs: Fernando Fraternali, Giuseppe Ruta		
<b>Xiao-Dong Yang</b> (Minikeynote)	Dynamics and wave manipulations of gyroscopic metamaterials	09:00am – 09:30am
<b>Marco Miniaci</b> , 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
<b>Amirsajjad Rezaei</b> , Federica Mezzani, Antonio Carcaterra	Long-range resonator-based metamaterials	09:45am – 10:00am
<b>Alessandro Fortunati</b> , Andrea Bacigalupo, Marco Lepidi, Andrea Arena, Walter Lacarbonara	Perturbation approach to a cellular metamaterial system with embedded vibration absorbers	10:00am – 10:15am

<b>DAY 4 – Friday, February 19, 2021</b>	<b>9:00am – 10:15am</b>
Recent trends in nonlinear dynamics 	Zoom Virtual Room
<b>ENERGY HARVESTING V</b>	

Chair: Marco Lepidi


<b>Mohammad Bukhari</b> , Oumar Barry	Self-tuning sliding mass electromagnetic energy harvester for dramatic frequency bandwidth enhancement	9:00am – 9:15am
<b>Dongmei Huang</b> , Jiayi Chen, Wei Li, Guidong Yang	Complexification-averaging analysis of the vibrational tristable energy harvester with a RL resonant circuit	9:15am – 9:30am
<b>Lin-Chuan Zhao</b> , Hong-Xiang Zou, Wen-Ming Zhang	Enclosed triboelectric-electromagnetic hybrid wave energy harvester using frequency-up mechanisms: Design and modeling	9:30am – 9:45am
<b>Meng Li</b> , Hong-Xiang Zou, Ke-Xiang Wei	Design and modeling of a compliant human motion energy harvester	9:45am – 10:00am
<b>Qiong Wang</b> , Lin-Chuan Zhao	A galloping piezoelectric energy harvester enhanced by the boundaries of triboelectric nanogenerators	10:00am – 10:15am


<b>DAY 4 – Friday, February 19, 2021</b>	<b>9:00am – 10:00am</b>
Special Session 	Zoom Virtual Room
<b>COMPLEX DYNAMICS OF COVID-19: MODELING, PREDICTION AND CONTROL IV</b>	


Chairs: Giuseppe Quaranta, Andrea Arena


<b>Didier Sornette</b> , Euan Mearns, Michael Schatz, Ke Wu	A cross-country comparison of COVID-19 response measures	9:00am – 9:15am
<b>Rohith G</b> , K. B. Devika	Nonlinear Analysis and Control of COVID-19 Dynamics	9:15am – 9:30am
<b>Sylvia Faria</b> , Sofia Fontes, Felipe Alcântara, Priscilla Souza, Angélica Kathariny Alves, Diogo Costa, Suélia Rosa	Analytical and numerical analysis of the mathematical model of a N95 respirator with and without chitosan nanoparticles	9:30am – 9:45am
Haitao Song, Zhongwei Jia, Zhen Jin, <b>Shengqiang Liu</b>	Estimation of COVID-19 outbreak size in Harbin, China	9:45am – 10:00am

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


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


<b>DAY 4 – Friday, February 19, 2021</b>		<b>10:30am – 11:30am</b>
Concepts and methods in nonlinear dynamics 		Zoom Virtual Room
<b>CHAOTIC SYSTEMS AND UNCERTAINTY IV</b>		
Chair: Andrea Salvatore		
<b>Shengli Chen</b> , Wu Zhiqiang	A new method for characterizing the joint probability density based on contour lines	10:30am – 10:45am
<b>Gaolei Li</b> , Yuan Yue, Celso Grebogi	Multistability in a two-degree-of-freedom nonlinear gear transmission system	10:45am – 11:00am
<b>Alexander Burov</b> , Ivan Kosenko, Vasily Nikonov	Detection of periodic motions of pendulum-like systems	11:00am – 11:15am
<b>Kamila Szewczyk</b> , Artur Durajski, Konrad Gruszka, Radosław Szczęśniak	Classical charged particle in highly nonlinear potential: nonlocal effects induced by the Abraham-Lorentz force	11:15am – 11:30am

DAY 4 – Friday, February 19, 2021		10:30am – 12:00pm
Nonlinear dynamics of mechanical and structural systems 		Zoom Virtual Room
<b>AEROSPACE STRUCTURES</b>		
Chairs: Franco Mastroddi, Marina Shitikova		
<b>Anton Doroshin</b>	Unloading the angular momentum of spacecraft using internal gravitational dampers	10:30am – 10:45am
<b>Bole Ma</b> , Baozeng Yue, Yong Tang, Jiarui Yu	Studies on the liquid sloshing and rigid-liquid-flexible coupling dynamics of spacecraft	10:45am – 11:00am
<b>Ti Chen</b>	Continuous leaderless synchronization control of multiple spacecraft on $SO(3)$	11:00am – 11:15am
Gianluca Pepe, <b>Elena Paifelman</b> , Antonio Carcaterra	Aeroelastic dynamic feedback control of a Volterra's airfoil	11:15am – 11:30am
<b>Marina Shitikova</b> , Vladimir Kandu	Nonlinear vibrations of a cylindrical pipe embedded in a fractional derivative medium	11:30am – 11:45am
Marina Shitikova, <b>Anastasiya Krusser</b>	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 – 11:45am
Nonlinear dynamics and control 		Zoom Virtual Room
<b>NONLINEAR VIBRATION CONTROL V</b>		
Chair: Giovanni Formica		
<b>Yun Zhu</b> , Meng Li	Self-coupling control of self-powered intelligent shock absorber	10:30am – 10:45am
<b>Kan Ye</b> , J.C. Ji	Dynamic analysis of a frictional oscillator subject to a novel zero-stiffness vibration isolator	10:45am – 11:00am
<b>Jianwang Shao</b> , Tao Zeng, Xian Wu, Jinmeng Yang	Influence of Wall Acoustic Impedance for Targeted Energy Transfer inside 3D Cavity Coupled with a Nonlinear Membrane	11:00am – 11:15am

DAY 4 – Friday, February 19, 2021		10:30am – 10:45am
Recent trends in nonlinear dynamics 		Zoom Virtual Room
<b>VEHICLE DYNAMICS</b>		
Chair: Giuseppe Quaranta		
<b>Jinhai Wang</b> , Jianwei Yang	Hopf Bifurcation and Hunting Stability of Railway Vehicle Wheelsets Negotiating Curve	10:30am – 10:45am

DAY 4 – Friday, February 19, 2021		10:30am – 11:15am
Recent trends in nonlinear dynamics 		Zoom Virtual Room
<b>FRACTIONAL ORDER SYSTEM II</b>		
Chair: Biagio Carboni		
<b>Zhe Zhang</b> , Toshimitsu Ushio, Jing Zhang, Feng Liu	Novel asymptotic stabilization conditions of nonlinear fractional-order composite systems via the decentralized control	10:30am – 10:45am
<b>Xiaojun Liu</b> , Ling Hong, Lixin Yang, Dafeng Tang	Bifurcation and synchronization of a fractional-order system	10:45am – 11:00am
<b>Deepika Deepika</b>	Fractional order chaos suppression via variable inverse tangential power based fractional order sliding mode controller	11:00am – 11:15am

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