

SECOND INTERNATIONAL NONLINEAR DYNAMICS CONFERENCE

NODYCON 2021 PROGRAM

(DRAFT)

Edited by

The NODYCON 2021 Program Committee

Sapienza University of Rome

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

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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

WORKSHOPS

MONDAY – February 15, 2021

10:00am - 1:00pm

WORKSHOP 1 – MR. D. CATELANI
MULTIDISCIPLINARY APPROACH TO
HIGH-LIFT DEVICE PROJECT: MSC
SOFTWARE INTEGRATED SIMULATION
TOOLS

2:00pm - 5:00pm

WORKSHOP 2 – PROF. H. DANKOWICZ
CONTINUATION TECHNIQUES FOR
PEDESTRIANS AND MOUNTAIN CLIMBERS
USING THE COCO SOFTWARE
PLATFORM

PLENARY PROGRAM

TUESDAY – February 16, 2021

8:00am - 8:25am

OPENING SESSION AND WELCOME

WEDNESDAY – February 17, 2021

2:15pm - 3:15pm

**THROUGH RAPHAEL'S EYES.
THE RENAISSANCE AS A VISION OF
BEAUTY AND GREATNESS**
PROF. IRENE BALDRIGA, SAPIENZA
UNIVERSITY

THURSDAY – February 18, 2021

2:15pm - 3:15pm

NODYS GENERAL ASSEMBLY MEETING

FRIDAY – February 19, 2021

2:15pm - 3:15pm

CLOSING CEREMONY

SOCIAL PROGRAM

The social program offered to all NODYCON 2021 attendees includes a video Lecture on Raphael and the Renaissance Arts at the Vatican Museums delivered by Sapienza Professor of Art History, Irene Baldriga.

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 Italian Renaissance as a vision of beauty and greatness through Raphael's eyes. As the Italian 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.



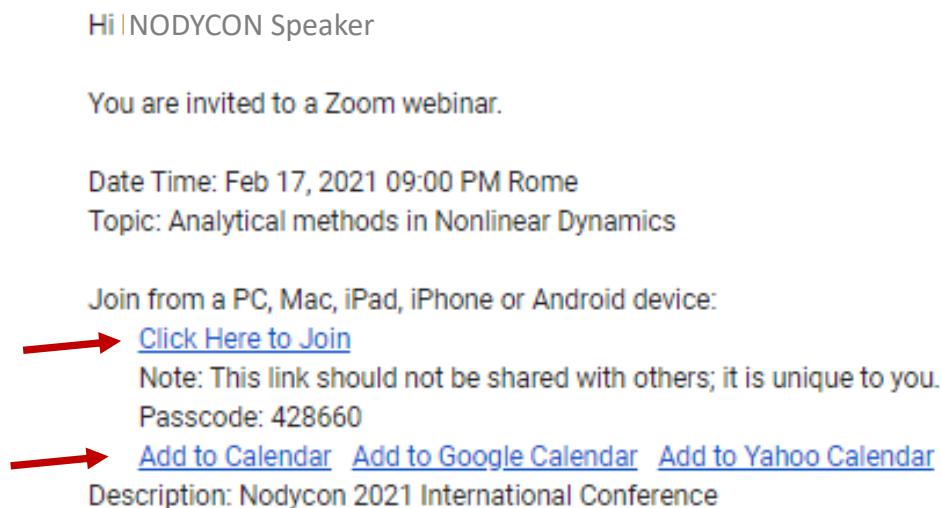
Raphael, The Borgo Fire, 1517, Vatican Rooms, Vatican Museums.

INSTRUCTIONS FOR CONFERENCE PARTICIPANTS

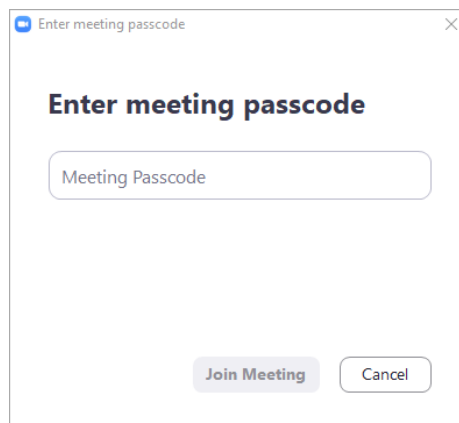
NODYCON 2021 (virtual) will be held via ZOOM video conferencing in Webinar mode. Detailed instructions are provided separately for Speakers/Panelists and for Attendees.

SPEAKERS/PANELISTS

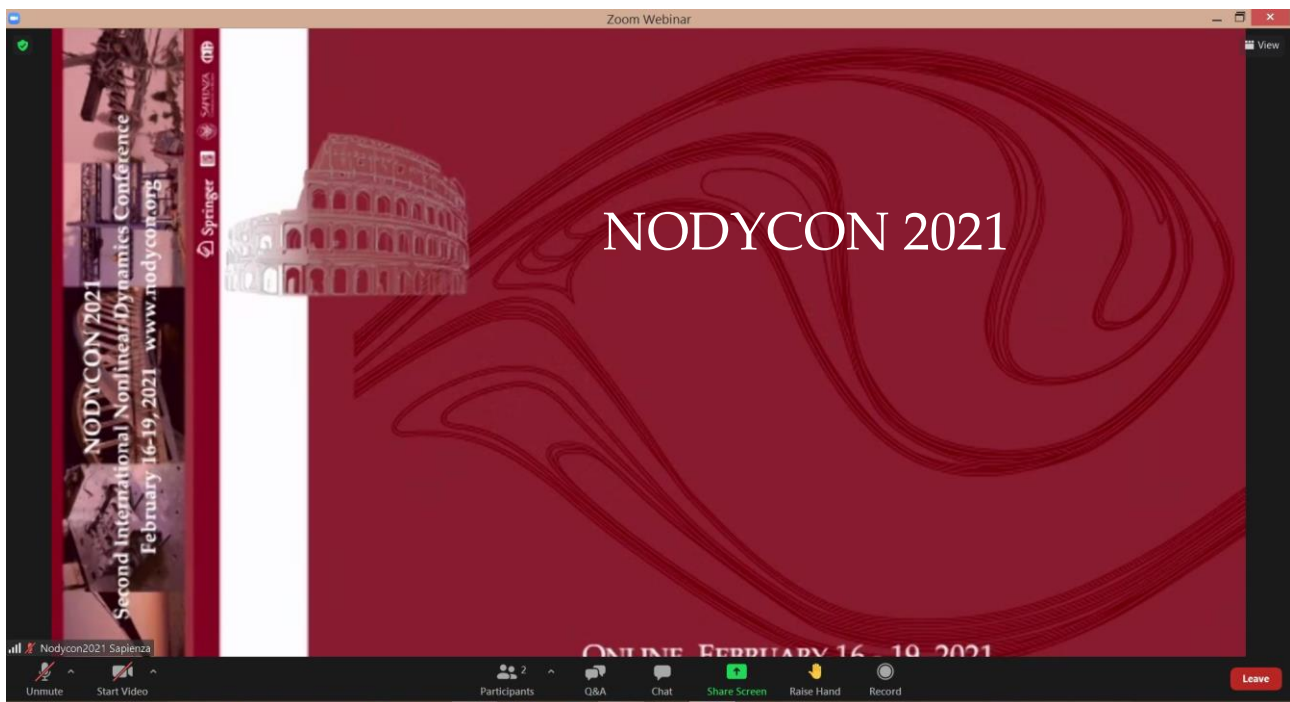
An internet connection with upload and download speed of at least 10 Mb/s is recommended. Speakers/Panelists must download ZOOM on their own devices and, although it is not mandatory, it is warmly suggested to employ a free personal ZOOM account. Speakers/Panelists will receive an e-mail containing a personal link and a passcode for participating to the session. By clicking on the link “[Click here to Join](#)” (see the first red arrow below)



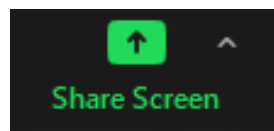
and entering the passcode (see screenshot below), the Speaker/Panelist will access the session at the scheduled time. It is warmly recommended to employ a Laptop or Desktop equipped with external headphones or earphones and microphone. The camera must be centered on their own face with attention to frame themselves up to the shoulders. If you use a laptop built-in camera place the device at a suitable height.



The screenshot below shows the ZOOM window for Speakers/Panelists.



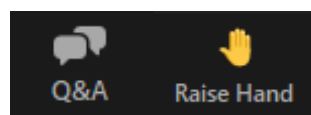
By default, only Speakers/Panelists have the privilege to use camera and audio. In case of live presentations, a Speaker/Panelist will be invited by the Chair of the session to share his/her screen to show the presentation. This action is performed by clicking on “**Share Screen**” button in the ZOOM toolbar (see screenshot below) and 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 the presentation.



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



In case of pre-recorded presentations, the Host of the session will run the video uploaded by the Speaker/Panelist via the webtool of the Conference at <https://nodycon.org/2021/>. The Q&A session will follow each presentation where the Attendees can ask questions to the Speakers/Panelists by using the Q&A chat or using the “**Raise Hand**” option (see 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, the Host of the session (following the Chair suggestion) will temporarily promote the Attendee to Speaker/Panelist role to ask a live question.

Please, test ZOOM on your own device before the Conference. If you cannot comply with the requirements described above or if you have any problem with ZOOM, please inform us urgently writing to secretariat_nodycon2021@nodycon.org.

ATTENDEES

An internet connection with upload and download speed of at least 3 Mb/s is required to attend the Conference. The link 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 their first name, last name and email address will be prompted (see screenshot below).

* Required information

First Name *

Last Name *

Email Address *

Confirm Email Address *

By registering, I agree to the [Privacy Statement](#) and [Terms of Service](#).

Register

After clicking on “**Register**” (see screenshot above) a link for joining the session will be shown (see screenshot below).

To Join the Webinar

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

Please click this URL to join. https://uniroma1.zoom.us/j/86391377290?tk=K-csZu1BenVkjADF49tDeZf_7WznDibXmnqoHiD1Rv8.DQIAAAAUHVPNihZEZ0FXVXZoSFJ1YU5xUkhQN25iVEx3AAAAAAAAAAAAAAAAAAAA&pwd=dFBjVGFZM09LOVdEMWNWdE5NNUo1Zz09&uuid=WN_Idvv3rTwSUqXqA27QnSSNQ

An email will be also sent to the indicated address with the link and passcode to participate to the session and to add the event in their own calendar (see the second red arrow below).

Hi NODYCON Attendee

Thank you for registering for "Analytical methods in Nonlinear Dynamics".

Please submit any questions to: nodycon2021.sapienza@uniroma1.it

Date Time: Feb 17, 2021 09:00 PM Rome

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

→ [Click Here to Join](#)

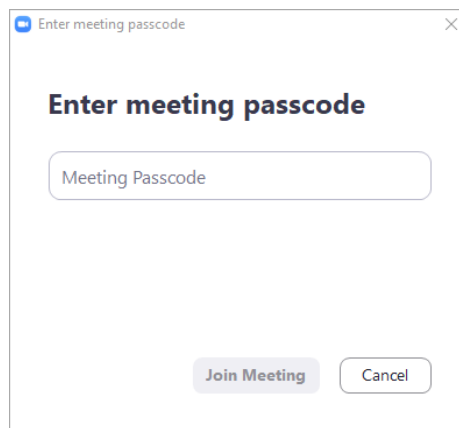
Note: This link should not be shared with others; it is unique to you.

Passcode: NODYCON21

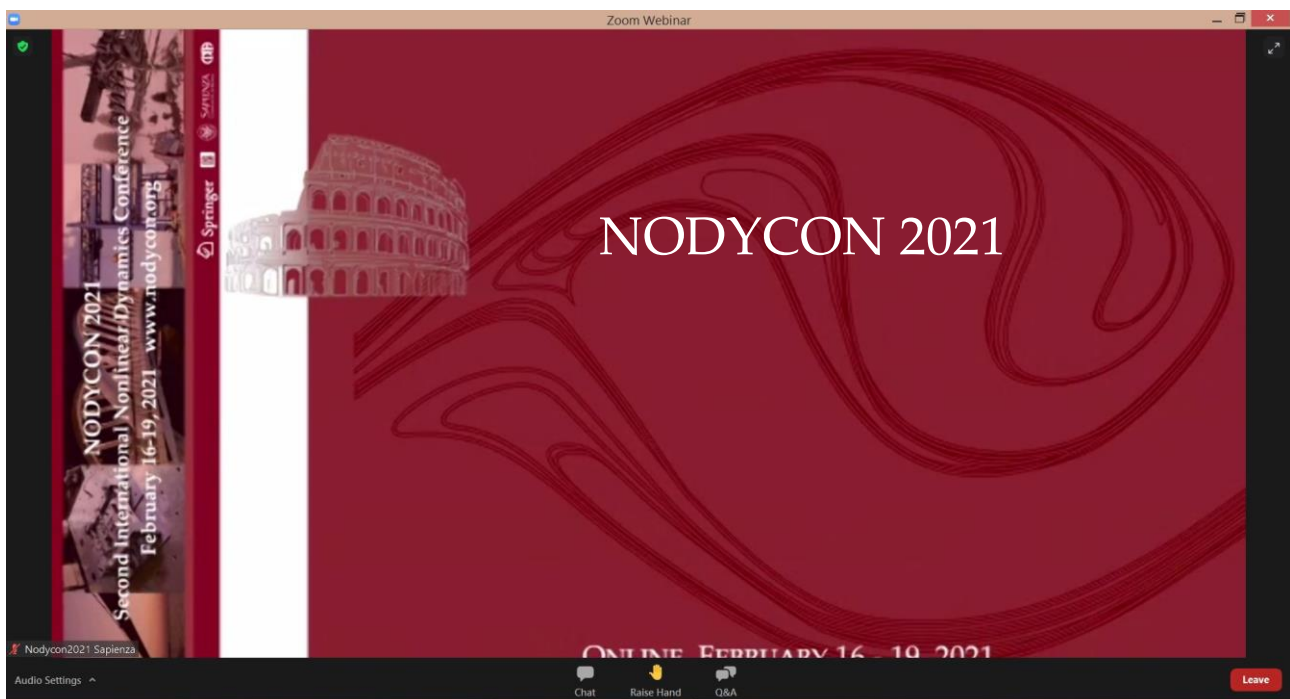
→ [Add to Calendar](#) [Add to Google Calendar](#) [Add to Yahoo Calendar](#)

Description: Nodycon 2021 International Conference

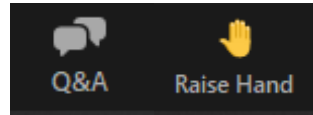
When an Attendee joins a session before it is started, the passcode must be entered (see screenshot below) to access the waiting room.

A screenshot of a Zoom application window titled "Enter meeting passcode". The window has a white background and a thin grey border. At the top left is a small blue Zoom icon, and at the top right is a close button (X). The main heading "Enter meeting passcode" is centered in bold black text. Below the heading is a rounded rectangular input field with the placeholder text "Meeting Passcode". At the bottom of the window are two buttons: "Join Meeting" and "Cancel", both with a light grey background and rounded corners.

The following screenshot shows the ZOOM window for an Attendee.



By default, only Speakers/Panelists have the privilege to use camera and audio. Questions to a 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 screenshot 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, the Host of the session (prompted by the Chair) will temporarily promote the Attendee to Speaker/Panelist role to ask a live question. The Attendee can choose this option only if he/she is joining the session with a device equipped with camera and microphone. Please, test ZOOM on your own device before the event.

SESSIONS ACRONYMS

A - Concepts and methods in nonlinear dynamics		B - Nonlinear dynamics of mechanical and structural systems	
FSI	Fluid-structure interaction I - II - III - IV - V	MSS	Mechanical systems and structures I - II - III - IV - V
NSS	Nonsmooth systems I - II - III - IV	ED	Experimental dynamics I - II
CSU	Chaotic systems and uncertainty I - II - III - IV	SIS	System identification and SHM I - II - III - IV
BDI	Bifurcation and dynamic instability I - II - III - IV	AS	Aerospace structures
CND	Computational nonlinear dynamics I - II - III - IV - V	MSO	Multistable oscillators
NW	Nonlinear waves I - II - III	CPM	Constitutive and phenomenological models
MBS	Multibody systems	MFS	Multifunctional structures I - II - III
ROM	Reduced-order models I - II	MIET	Modal interactions and energy transfer I - II
TD	Transient dynamics	RS	Rotating systems I - II - III
AT	Analytical techniques I - II - III - IV - V	PED	Passive energy damping
C - Nonlinear dynamics and control		D - Recent trends in nonlinear dynamics	
NVC	Nonlinear vibrations control I - II - III - IV - V	VD	Vehicle dynamics
SA	Sensors and actuators I - II	EH	Energy harvesting I - II - III - IV
CNS	Control of nonlinear systems I - II - III	MNS	MEMS/NEMS I - II - III - IV
NS	Networks synchronization	FOS	Fractional order system I - II
		MM	Metamaterials I - II
Special Sessions		BCR	Biocapsule robots I - II
		BSD	Biological systems dynamics I - II - III
		SN	Stochasticity and noise I - II
		NPBED	Nonlinear phenomena in bio- and ecosystems dynamics I - II
SS-C19	Complex dynamics of COVID-19 I - II - III - IV		
SS-LIM	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						
	Zoom Virtual Room (link TBA)	Zoom Virtual Room (link TBA)	Zoom Virtual Room (link TBA)	Zoom Virtual Room (link TBA)	Zoom Virtual Room (link TBA)	Zoom Virtual Room (link TBA)	Zoom Virtual Room (link TBA)
12:00pm - 1:00pm	NSS - I	BDI - I	AT - I	MSS - I	SS-C19 - I	MNS - I	BSD - 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							
	Zoom Virtual Room (link TBA)	Zoom Virtual Room (link TBA)	Zoom Virtual Room (link TBA)	Zoom Virtual Room (link TBA)	Zoom Virtual Room (link TBA)	Zoom Virtual Room (link TBA)	Zoom Virtual Room (link TBA)
9:00am - 10:15am	FSI - II	NSS - II	BDI - II	RS - II	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	SS-LIM
12:00pm - 12:15pm	Coffee Break						
12:15pm - 1:15pm	ROM - I	ED - I	MFS - I	SA - II	BCR - I	NPBED - I	
1:15pm - 2:15pm	Lunch Break						
2:15pm - 3:15pm	Social Program - Through Raphael's eyes. <i>The Renaissance as a vision of beauty and greatness</i>						
3:15pm - 3:30pm	Coffee Break						
3:30pm - 5:00pm	BDI - III	CND - III	AT - III	MSS - II	NVC - II	CNS - II	EH - III
5:00pm - 5:15pm	Coffee Break						
5:15pm - 6:30pm	NSS – III	NW - I	MSS - III	MFS - II	MNS - II	FOS - I	SS-C19 - II

DAY 3 – Thursday, February 18, 2021							
	Zoom Virtual Room (link TBA)	Zoom Virtual Room (link TBA)	Zoom Virtual Room (link TBA)	Zoom Virtual Room (link TBA)	Zoom Virtual Room (link TBA)	Zoom Virtual Room (link TBA)	Zoom Virtual Room (link TBA)
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 - IV	SIS - III	MFS - III	RS - III	NVC - III	EH - IV
12:00pm - 12:15pm	Coffee Break						
12:15pm - 1:15pm	FSI - III	TD	AT - IV	MSS - 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	ED - II	NVC - IV	SN - I	
5:00pm - 5:15pm	Coffee Break						
5:15pm - 6:30pm	FSI - IV	ROM - II	AT - V	MSS - V	SIS - IV	BCR - II	BSD - II


DAY 4 – Friday, February 19, 2021						
	Zoom Virtual Room (link TBA)	Zoom Virtual Room (link TBA)	Zoom Virtual Room (link TBA)	Zoom Virtual Room (link TBA)	Zoom Virtual Room (link TBA)	Zoom Virtual Room (link TBA)
9:00am - 10:15am	MISO	MINS - IV	MM - II	SN - II	NPBED - II	SS-C19 - IV
10:15am - 10:30am	Coffee Break					
10:30am - 12:00pm	FSI - V	CSU - IV	AS	NVC - V	VD	FOS - II
12:00pm - 2:15pm	Lunch Break					
2:15pm - 3:15pm	Closing Ceremony					


DAY 1 – Tuesday, February 16, 2021


OPENING & WELCOME 8:00am – 8:25am


DAY 1 – Tuesday, February 16, 2021		8:00am – 6:30pm
KEYNOTE LECTURES		Zoom Virtual Room (link TBA)
Chair: (TBA)		
J. Kurths	Exploring predictability of extreme climate events via a complex network approach	8:25am – 9:00am
G. Haller	Fast reduction of nonlinear finite-element models to spectral submanifolds	9:00am – 9:35am
M.P. Cartmell	Towards a high-performance Foucault pendulum for the measurement of relativistic gravity	9:35am – 10:10am
Coffee break		10:10am – 10:30am
Chair: (TBA)		
H. Yabuno	Applications of self-excited oscillation and weakly mode coupling to ultrasensitive micro-sensors	10:30am – 11:05am
Li-Qun Chen	Internal resonances and applications in vibratory energy harvesting	11:05am – 11:40am
Technical sessions		12:00pm – 1:00pm
Lunch break		1:00pm – 2:00pm
Chair: (TBA)		
Walter Lacarbonara	30 Years of Nonlinear Dynamics	2:00pm – 2:20pm
C. Nataraj	Can nonlinear dynamics improve medical diagnostics?	2:20pm – 2:55pm
A. F. Vakakis	Nonlinear acoustic non-reciprocity	2:55pm – 3:30pm
Special Session & Panel “ Complex dynamics of COVID-19: modeling, prediction and control ”		
Chair: (TBA)		
B. Balachandran	COVID-19: Evolution of infection dynamics	3:30pm – 4:00pm
YangQuan Chen	Modeling, prediction, mitigation and vaccine policy for COVID-19 using big data and fractional calculus	4:00pm – 4:30pm
Jose Machado	Computational modeling and data analysis of COVID19 outbreak	4:30pm – 5:00pm
	Panel	5:00pm – 5:30pm
Technical sessions		5:30pm – 6:30pm


DAY 1 – Tuesday, February 16, 2021 – 12:00pm – 1:00pm


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


DAY 1 – Tuesday, February 16, 2021		12:00pm – 1:00pm
Concepts and methods in nonlinear dynamics 		Zoom Virtual Room (link TBA)
BIFURCATION AND DYNAMIC INSTABILITY I		
Chair: (TBA)		
Martin Volvert, Gaetan Kerschen	Characterizing fundamental, superharmonic and subharmonic resonances using phase locked nonlinear modes	12:00pm – 12:15pm
Tamas Kalmar-Nagy, Janos Lelkes	Analysis of periodic and quasi-periodic orbits of a hysteretic oscillator	12:15pm – 12:30pm
Francesco D'Annibale, Manuel Ferretti	On the effects of added devices on the nonlinear behaviour of the damped Beck beam	12:30pm – 12:45pm
Guidong Yang, Dongmei Huang, Wei Li	Stochastic response and bifurcation of a strongly nonlinear system with impact and Coulomb friction	12:45pm – 1:00pm

DAY 1 – Tuesday, February 16, 2021		12:00pm – 1:00pm
Concepts and methods in nonlinear dynamics 		Zoom Virtual Room (link TBA)
ANALYTICAL TECHNIQUES I		
Chair: (TBA)		
Ivana Kovacic	Externally excited purely nonlinear oscillators: exact steady-state solutions, their approximations and further benefits	12:00pm – 12:15pm
Luca Marino, Alice Cicirello	Dynamic response features and motion regimes of multimodal systems with Coulomb damping	12:15pm – 12:30pm
Angelo Luongo, Arnaldo Casalotti, Daniele Zulli	Perturbation analysis for large amplitude vibrations of beam-like pipes with deformable cross-section	12:30pm – 12:45pm
Hua Li, Yong Xu, Ralf Metzler, Jürgen Kurths	Transition path properties for one-dimensional systems under Poisson white noise	12:45pm – 1:00pm


DAY 1 – Tuesday, February 16, 2021		12:00pm – 1:00pm
Nonlinear dynamics of mechanical and structural systems 		Zoom Virtual Room (link TBA)
MECHANICAL SYSTEMS AND STRUCTURES I		
Chair: (TBA)		
Hossein Bakhshi Khaniki, Mergen Ghayesh, Rey Chin, Marco Amabili	Nonlinear mechanics of axially moving soft belts on an elastic foundation	12:00pm – 12:15pm
Weipeng Hu	Tow Dynamic Behaviors of Beam-type Orbital Debris	12:15pm – 12:30pm
Fei Liu, Quan Hu, Lei Liu, Xiaohui Li, Weihui Liu, Wen Wen, Jingchao Zhao	Kinematics and dynamics of parallel space robot for debris capturing	12:30pm – 12:45pm
Mehdi Akbarzadeh, Sebastian Oberst, Y. K. Chiang, B. Halkon, A. Melnikov, D. Powell	Numerical study of acoustic radiation forces to contactless excite a microcantilever	12:45pm – 1:00pm


DAY 1 – Tuesday, February 16, 2021		12:00pm – 1:00pm
Special Session 		Zoom Virtual Room (link TBA)
COMPLEX DYNAMICS OF COVID-19: MODELING, PREDICTION AND CONTROL I		
Chair: (TBA)		
Didier Sornette, Euan Mearns, Michael Schatz, Ke Wu	A cross-country comparison of COVID-19 response measures	12:00pm – 12:15pm
Stefano Iacus, Francesco Sermi, Spyridon Spyrtatos, Dario Tarchi, Michele Vespe	How fully anonymized and aggregated mobile positioning data can help in tracking and controlling the COVID-19 pandemic	12:15pm – 12:30pm
Lihong Guo, Yanting Zhao, YangQuan Chen	Multi-models decision support for county-level COVID-19 outbreak prediction and intervention management	12:30pm – 12:45pm
Yanting Zhao, Weiyuan Ma, Lihong Guo, YangQuan Chen	Epidemiological and forecast analysis of COVID-19 based on a fractional order epidemic model using SLDO	12:45pm – 1:00pm


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


DAY 1– Tuesday, February 16, 2021		12:00pm – 1:00pm
Recent trends in nonlinear dynamics 		Zoom Virtual Room (link TBA)
BIOLOGICAL SYSTEMS DYNAMICS I		
Chair: (TBA)		
Fanni Kádár, Gabor Stepan	Supercritical Hopf bifurcation in valve dynamics	12:00pm – 12:15pm
Ilya Sysoev, Natalia Makarova, Marina Sysoeva, Lyudmila Vinogradova	Modeling limbic seizure initiation with an ensemble of delay coupled neurooscillators	12:15pm – 12:30pm
James Emilian, Veda Samhitha Kanduri, Chandan Bose, Jaromir Horacek, Venkatramani Jagadish	Bifurcation behavior in vocal folds and its impact on physiological conditions	12:30pm – 12:45pm
Julijana Simonović, Thomas Woolley	Forced predator-prey system employed for bone mechano-transduction description	12:45pm – 1:00pm


DAY 1 – Tuesday, February 16, 2021 – 5:30pm – 6:30pm


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

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

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

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

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

DAY 1 – Tuesday, February 16, 2021		5:30pm – 6:30pm
Nonlinear dynamics and control 		Zoom Virtual Room (link TBA)
SENSORS AND ACTUATORS I		
Chair: (TBA)		
Ibrahim Gebrel, Ligang Wang, Samuel Asokanthan	Influence of Model Nonlinearities on the Dynamics of Ring-type Gyroscopes	5:30pm – 5:45pm
Giulia Lanzara	Experimental demonstration of fairly flat frequency response of an electrospun PVDF fiber mat	5:45pm – 6:00pm
Hamidreza Esmaeili, Hadi Arvin, Walter Lacarbonara	Nonlinear forced vibration analysis of cantilever CNT microbeams bonded with piezo-layers with an attached mass mounted on a shuttle mass	6:00pm – 6:15pm
Giulia Lanzara	Locally actuated electrospun piezoelectric webs	6:15pm – 6:30pm

DAY 1 – Tuesday, February 16, 2021

5:30pm – 6:30pm

Recent trends in nonlinear dynamics

ENERGY HARVESTING I

Zoom Virtual Room
(link TBA)

Chair: (TBA)

Ben Gunn, **Stephanos Theodossiades**, Steve Rothberg

A passively self-tuned torsional vibration energy harvester

5:30pm – 5:45pm

Adam Bouma, Rui Vasconcellos, Abdessattar Abdelkefi

Impacts of multi-segmented discontinuous functions on the dynamics of piezoaeroelastic energy harvesters

5:45pm – 6:00pm

Americo Cunha Jr

The cross-entropy method for optimization of energy harvesting systems


6:00pm – 6:15pm


Jose M. Balthazar, Angelo M. Tusset, Rodrigo T. Rocha, Jorge L.P. Felix, Marcus Varanis, Clivaldo Oliveira, Mauricio Ribeiro, Itamar Iliuk, Grzegorz Litak


On energy harvesting with time-varying frequency by using magneto piezo elastic oscillators with memory


6:15pm – 6:30pm


DAY 2 – Wednesday, February 17, 2021 – 9:00am – 10:15am


DAY 2 – Wednesday, February 17, 2021		9:00am – 10:15am
Concepts and methods in nonlinear dynamics 		Zoom Virtual Room (link TBA)
FLUID-STRUCTURE INTERACTION II		
Chair: (TBA)		
Xugang Hua (Minik keynote)	Multi-mode vortex-induced vibration and its suppression of long-span suspension bridges	9:00am – 9:30am
Heng Su , Junxian Zhang, Fangtao Xie, Yegao Qu, Zhike Peng	Modelling and analysis of nonlinear vibration and noise for elastic pipes conveying fluid with frictional supports	9:30am – 9:45am
Rik Mondal , Chandan Bose, Sirshendu Mondal	Synchronization study on the vortex-induced vibrations using wake oscillator model	9:45am – 10:00am
Miroslav Byrtus	Model of non-synchronous vibration and frequency lock-in in coupled structures	10:00am – 10:15am


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

DAY 2 – Wednesday, February 17, 2021		9:00am – 10:15am
Concepts and methods in nonlinear dynamics 		Zoom Virtual Room (link TBA)
BIFURCATION AND DYNAMIC INSTABILITY II		
Chair: (TBA)		
Katica Hedrih (Stevanović)	Bifurcation and triggers of coupled singularities in the dynamics of generalized rolling pendulums	9:00am – 9:15am
Simona Di Nino, Angelo Luongo	Nonlinear dynamics of a base-isolated beam under turbulent wind flow	9:15am – 9:30am
Arnab Basak	The effects of gravity modulation on Rayleigh-Banard magnetoconvection	9:30am – 9:45am
Xiaoshen Zhang, Zhe Sun, Lei Zhao, Xunshi Yan, Jingjing Zhao, Zhengang Shi	Analysis of nonlinear behaviors in AMB-rotor system	9:45am – 10:00am
Essia Added, Hassane Gritli	Birth of the Neimark-Sacker bifurcation for the passive compass-gait walker	10:00am – 10:15am

DAY 2 – Wednesday, February 17, 2021		9:00am – 10:15am
Nonlinear dynamics of mechanical and structural systems 		Zoom Virtual Room (link TBA)
ROTATING SYSTEMS II		
Chair: (TBA)		
Tariq Alzarooni, Mohammad Al-Shudeifat	Post-resonance backward whirl analysis of accelerating cracked overhung rotor system using fatigue crack model	9:00am – 9:15am
Yang Yang, Yiren Yang, Dengqing Cao	Vibration mitigation of a dual-rotor system having rub-impact based on nonlinear energy sink	9:15am – 9:30am
Kelly Yee, Mergen Ghayesh	Dynamics of a rotating Euler-Bernoulli microbeam	9:30am – 9:45am
Xiao Jun Gu	Nonlinear dynamics analysis of rotating pretwisted cantilever thin plate reinforced by graphene	9:45am – 10:00am
Kuan Lu, Haopeng Zhang, Shibo Zhao, Yongfeng Yang	A transient characteristic-based balancing method of rotor system without trail weights	10:00am – 10:15am

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


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


DAY 2 – Wednesday, February 17, 2021		09:00am – 10:15am
Recent trends in nonlinear dynamics 		Zoom Virtual Room (link TBA)
ENERGY HARVESTING II		
Chair: (TBA)		
Dongmei Huang, Jiayi Chen, Wei Li, Guidong Yang	Complexification-averaging analysis of the vibrational tristable energy harvester with a RL resonant circuit	09:00am – 09:15am
Pradeep Malaji, Tanmoy Mukhopadhyay	Nonlinear resonator based metastructures for vibration attenuation and energy harvesting	09:15am – 09:30am
Wei Wang, Yuling Song	Nonlinear dynamics analysis of electric energy regeneration device based on vibration energy recovery	09:30am – 09:45am
Jing Li, Luo Lei, Dong Guan, Hui Shen, Junjie Gong	Dynamic modeling for a mechatronic energy harvesting shock absorbers	09:45am – 10:00am
Ning Yu, Chuanyu Wu, Gaohong Yu, Bo Yan	Bistable electromagnetic energy harvesting enhanced with a resonant circuit	10:00am – 10:15am


DAY 2 – Wednesday, February 17, 2021 – 10:30am – 12:00pm


DAY 2 – Wednesday, February 17, 2021		10:30am – 12:00pm
Concepts and methods in nonlinear dynamics		Zoom Virtual Room (link TBA)
ANALYTICAL TECHNIQUES II		
Chair: (TBA)		
Anton Belyakov, Alexander Seyranian	Expansion of evolution matrix and Lyapunov exponents with respect to parameters	10:30am – 10:45am
Zheng Fei, Xu Jie, Yuan Xuegang	Quantitative and qualitative analysis of a class of general Duffing systems	10:45am – 11:00am
Bo-Wei Qin, Kwok-Wai Chung, Antonio Algaba, Alejandro J. Rodríguez-Luis	Estimating generic canard explosions via efficient symbolic computation	11:00am – 11:15am
Bin Tang, Weilei Wu	An approximate approach for solving the steady-state response of a two-stage nonlinear vibration isolation system	11:15am – 11:30am
Aalokeparno Dhar, I R Praveen Krishna	Semi-analytical approaches for solving Duffing oscillator with multi-frequency excitation	11:30am – 11:45am
Sandra Carillo, Mariagrazia Naso, Elena Vuk, Federico Zullo	Recent results on commutative and non-commutative soliton equations	11:45am – 12:00pm


DAY 2 – Wednesday, February 17, 2021		10:30am – 12:00pm
Concepts and methods in nonlinear dynamics		Zoom Virtual Room (link TBA)
CHAOTIC SYSTEMS AND UNCERTAINTY I		
Chair: (TBA)		
Gaolei Li, Yuan Yue, Celso Grebogi	Multistability in a two-degree-of-freedom nonlinear gear transmission system	10:30am – 10:45am
Qi Liu, Yong Xu	Uncertainty propagation in an aeroelastic airfoil system with initial condition or parameter uncertainty	10:45am – 11:00am
Xiaoliang Gan, Haoyu Wang, Ping Ao	Does the smooth planar dynamical system with one arbitrary limit cycle always exists smooth Lyapunov function	11:00am – 11:15am
Arvind Raj, Sirshendu Mondal, Venkatramani Jagadish	Investigations into stochastic nonlinear aeroelastic responses using recurrence networks	11:15am – 11:30am
Alexander Burov, Ivan Kosenko, Vasily Nikonov	Detection of periodic motions of pendulum-like systems	11:30am – 11:45am
Wenzheng Zhang, Zhentao Zhao, Datian Niu	Nonlinear dynamics of hyperelastic cylindrical membranes composed of incompressible Ogden materials	11:45am – 12:00pm

DAY 2 – Wednesday, February 17, 2021		10:30am – 12:00pm
Concepts and methods in nonlinear dynamics 		Zoom Virtual Room (link TBA)
COMPUTATIONAL NONLINEAR DYNAMICS II		
Chair: (TBA)		
Sotirios Natsiavas , Panagiotis Passas, Elias Paraskevopoulos	A novel time-stepping method for multibody systems with frictional impacts	10:30am – 10:45am
Roberto Alcorta , Benoit Prabel, Sebastien Baguet	DYNC: a Cast3M module for the bifurcation analysis of nonlinear mechanical vibrations	10:45am – 11:00am
Xiao Ye Mao , 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
Ayan Das , Nirmalendu Debnath	Sensitivity based model updating utilizing complex modal data from viscous and Caughey damping	11:15am – 11:30am
Jiarui Yu , Baozeng Yue, Bole Ma	Isogeometric analysis for large-amplitude sloshing	11:30am – 11:45am
Daniela Addessi, Paolo Di Re, Cristina Gatta , Mariacarla Nocera	Two-scale curved beam model for dynamic analysis of masonry arches	11:45am – 12:00pm


DAY 2 – Wednesday, February 17, 2021		10:30am– 12:00pm
Nonlinear dynamics of mechanical and structural systems 		Zoom Virtual Room (link TBA)
SYSTEM IDENTIFICATION AND SHM II		
Chair: (TBA)		
Rui Zhu , Stefano Marchesiello, Dario Anastasio, Dong Jiang, Qingguo Fei	Identification of nonlinear damping using nonlinear subspace method	10:30am – 10:45am
Nadezhda Nikolaeva , Anton Sheludko	Application of particle swarm optimization for parameter estimation of the logistic map	10:45am – 11:00am
Maicol Laurenza , Gianluca Pepe, Antonio Carcaterra	Identification of robot quadrupeds’ gait by genetic algorithm	11:00am – 11:15am
Ayan Das , Nirmalendu Debnath	A Bayesian finite element model updating combining normal-lognormal distributions and its experimental evaluation	11:15am – 11:30am
Sha Wei , Zhike Peng, Hu Ding, Li-Qun Chen	Identification of MDOF time-varying systems under forced vibration using intrinsic chirp component decomposition	11:30am – 11:45am
Marzieh Gh , Afshin Banazadeh	Accurate model identification of quadcopters with moments of inertia uncertainty and time delay	11:45am – 12:00pm


DAY 2 – Wednesday, February 17, 2021		10:30am – 12:00pm
Nonlinear dynamics and control 		Zoom Virtual Room (link TBA)
NONLINEAR VIBRATIONS CONTROL I		
Chair: (TBA)		
Joseph Chang Lun Chan, Tae H. Lee, Chee Pin Tan, Hieu Trinh, Ju H. Park	A nonlinear observer for robust fault reconstruction in one-sided Lipschitz and quadratically inner-bounded nonlinear descriptor systems	10:30am – 10:45am
Stefano Pagliaro, Angelo Di Egidio	Dynamic performances of a 2 dof system coupled with rigid block and inerters	10:45am – 11:00am
Jianwang Shao, 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
Youssef Fahmy, Ayman El-Badawy	Fuzzy model predictive pitch control of flexible wind turbine blade	11:15am – 11:30am
Yun Zhu, Meng Li	Self-coupling control of self-powered intelligent shock absorber	11:30am – 11:45am
Ge Yan, Sen Wang, Wen-Ming Zhang	Large stroke quasi-zero stiffness vibration isolator by exploring geometric nonlinearity of r-shaped structure	11:45am – 12:00pm


DAY 2 – Wednesday, February 17, 2021		10:30am – 12:00pm
Nonlinear dynamics and control 		Zoom Virtual Room (link TBA)
CONTROL OF NONLINEAR SYSTEMS I		
Chair: (TBA)		
Alexander Alyukov, Michael Leamy	Arresting motion in nonlinear systems using two-scale command shaping	10:30am – 10:45am
Yinnan Luo, Ulrich Johannes Römer, Lena Zentner, Alexander Fidlin	Improving energy efficiency of a bipedal walker with optimized nonlinear elastic coupling	10:45am – 11:00am
Bence Szaksz, Gabor Stepan	Bifurcations in delayed collocated position control	11:00am – 11:15am
Ashwad Raaj, Venkatramani Jagadish, Sirshendu Mondal	Investigating amplitude death as a possible flutter suppression mechanism in a pitch-plunge aeroelastic system	11:15am – 11:30am
Giuseppe Avon, Arturo Buscarino	Simulation platform for resistive wall modes controller evaluation	11:30am – 11:45am
Nehal Elzayat, Ayman El-Badawy	Nonlinear model predictive control for a bi-rotor system	11:45am – 12:00pm


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


DAY 2 – Wednesday, February 17, 2021 – 12:15pm – 1:15pm


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

DAY 2 – Wednesday, February 17, 2021		12:15pm – 1:15pm
Nonlinear dynamics of mechanical and structural systems 		Zoom Virtual Room (link TBA)
EXPERIMENTAL DYNAMICS I		
Chair: (TBA)		
Hasti Hayati, David Eager, Sebastian Oberst	Recurrence plot quantification analysis of greyhound galloping gait	12:15pm – 12:30pm
Xin Xue, Guojian Shen, Min Li, Hongbai Bai	Nonlinear dynamic characteristics of bellow structure covered with elastic-porous metal-rubber	12:30pm – 12:45pm
Maksymilian Bednarek, Donat Lewandowski, Jan Awrejcewicz	Determining magnetic and electromagnetic springs forces and their usage in damping vibrations	12:45pm – 1:00pm
Weikai Ren, Ningde Jin, Jiachen Zhang	Rescaled range permutation entropy: A method for quantifying the dynamical complexity of gas-liquid two-phase slug flows	1:00pm – 1:15pm


DAY 2 – Wednesday, February 17, 2021		12:15pm – 1:15pm
Nonlinear dynamics of mechanical and structural systems 		Zoom Virtual Room (link TBA)
MULTIFUNCTIONAL STRUCTURES I		
Chair: (TBA)		
Yan Qing Wang, MeiWen Teng	Nonlinear forced vibration of metal foam rectangular plates reinforced with graphene platelets	12:15pm – 12:30pm
N S V N Hanuman, Tanmoy Bose	An analytical and numerical study to characterize the acoustic nonlinearity parameter (β_2) with LDR frequency	12:30pm – 12:45pm
Yan Niu, Minghui Yao, Zhang Wei	Nonlinear vibrations of rotating pre-twisted variable thickness composite blades containing graphene reinforced composite layers	12:45pm – 1:00pm
Giulia Lanzara, Antonio Loisi, Federico Fabriani, Edoardo Bemporad	Motion and interaction of magnetic particles for advanced materials	1:00pm – 1:15pm


DAY 2 – Wednesday, February 17, 2021		12:15pm – 1:15pm
Nonlinear dynamics and control 		Zoom Virtual Room (link TBA)
SENSORS AND ACTUATORS II		
Chair: (TBA)		
Masamichi Uemori, Hiroshi Yabuno, Yasuyuki Yamamoto, Sohei Matsumoto	Measurement of minute stiffness change by virtual cantilever virtually coupled with real cantilever	12:15pm – 12:30pm
Shinpachiro Urasaki, Yudai Tanaka, Hiroshi Yabuno	Proposition of nonlinear sensor-less amplitude control of cantilever for micro-viscometer	12:30pm – 12:45pm
Muhammad Shamrooz Aslam, Irfan Qaisar	Design of sliding mode controller for the estimation of sensor/actuator fault with unknown input observer for satellite control system	12:45pm – 1:00pm
Andrea Salvatore, Walter Lacarbonara	On the shock performance of a tri-stable vibration isolator	1:00pm – 1:15pm


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


DAY 2 – Wednesday, February 17, 2021		12:15pm – 1:15pm
Recent trends in nonlinear dynamics 		Zoom Virtual Room (link TBA)
NONLINEAR PHENOMENA IN BIO- AND ECO-SYSTEMS DYNAMICS I		
Chair: (TBA)		
Yaqian Chen, Yanmei Kang, Junsong Wang	Critical dynamic analysis for the beta oscillations in Parkinsons disease	12:15pm – 12:30pm
J. Leonel Rocha, Abdel-Kaddous Taha	Nonlinear dynamics and bifurcation analysis of homographic Ricker maps	12:30pm – 12:45pm
Lukasz Plociniczak	Relaxation-oscillations in a conceptual climate model	12:45pm – 1:00pm
Taqseer Khan, Harindri Chaudhary	Compound difference anti-synchronization in generalized lotka-volterra biological systems via active control method	1:00pm – 1:15pm


DAY 2 – Wednesday, February 17, 2021 – 3:30pm – 5:00pm


DAY 2 – Wednesday, February 17, 2021		3:30pm – 5:00pm
Concepts and methods in nonlinear dynamics 		Zoom Virtual Room (link TBA)
BIFURCATION AND DYNAMIC INSTABILITY III		
Chair: (TBA)		
Julio C. Coaquira, Daniel C.T. Cardoso, Paulo Gonçalves , Diego Orlando	Parametric instability and bifurcation of thin-walled axially compressed long FRP columns	3:30pm – 3:45pm
Guilherme Franzini, Carlos Mazzilli	Numerical studies on the nonlinear dynamics of the Ziegler column under pulsating follower force	3:45pm – 4:00pm
Brian Saunders , Rui Vasconcellos, Robert Kuether, Abdessattar Abdelkefi	Bifurcation analysis of a Duffing oscillator with a multi-segmented freeplay nonlinearity	4:00pm – 4:15pm
Quan Qang, Chanh Kieu	Hopf bifurcations and transitions of two-dimensional quasi-geostrophic flows	4:15pm – 4:30pm
Timothy Alvis , Gregory Taylor, Abdessattar Abdelkefi	Insights on the impacts of multi-segmented motion limiting constraints on the nonlinear performance and stability of pipeline conveying fluid.	4:30pm – 4:45pm
Enrique Ponce , Emilio Freire, Manuel Ordoñez	Stability boundaries for generic two-step Hill's equations	4:45pm – 5:00pm

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

DAY 2 – Wednesday, February 17, 2021		3:30pm – 5:00pm
Concepts and methods in nonlinear dynamics 		Zoom Virtual Room (link TBA)
ANALYTICAL TECHNIQUES III		
Chair: (TBA)		
Emmanuel Gourdon, Alireza Ture Savadkoohi, Claude-Henri Lamarque	Analytical approximation of forced oscillations of nonlinear Helmholtz resonator by homotopy analysis method	3:30pm – 3:45pm
Ayse Sapmaz, Brian Feeny, Venkat Ramakrishnan	Second-order perturbation analysis of forced nonlinear Mathieu equation	3:45pm – 4:00pm
Fatemeh Afzali, Ehsan Kharazmi, Brian Feeny	Resonances of van der Pol equation with parametric damping	4:00pm – 4:15pm
Ashu Sharma	On generalization of resonances in parametrically excited systems	4:15pm – 4:30pm
Ryan Quintana, Samantha Ceballes, Abdessattar Abdelkefi	Nonlinear forced vibrations and buckling characteristics of a fluid conveying nanotube embedded in a Kelvin-Voigt viscoelastic foundation	4:30pm – 4:45pm
Laura Menini, Corrado Possieri, Antonio Tornambè	An algorithm to determine the exact solution to polynomial semi-definite problems: application to structural optimization	4:45pm – 5:00pm

DAY 2 – Wednesday, February 17, 2021		3:30pm – 5:00pm
Nonlinear dynamics of mechanical and structural systems 		Zoom Virtual Room (link TBA)
MECHANICAL SYSTEMS AND STRUCTURES II		
Chair: (TBA)		
Jose M. Balthazar, Rodrigo T. Rocha, Angelo M. Tusset, Mauricio Ribeiro, Jorge L.P. Felix (Minikeynote)	Full interaction of a vibrating elastic structure with an energy source of limited power supply	3:30pm – 4:00pm
Maor Farid, Samuel Rudy	Real-time data-driven method for fatigue failure prediction under stochastic loading	4:00pm – 4:15pm
Dongxiao Hong, Evangelia Nicolaidou, Thomas Hill, Simon Neild	Identifying phase-varying periodic behaviours in a conservative cable model	4:15pm – 4:30pm
Jacob Barba, Kaleb Jankowski, Hunter Sedillo, Adam Takeshita, Adam Bouma, Abdessattar Abdelkefi	Nonlinear investigation of bolted joint lifetime effects of the removable component of the BARC structure	4:30pm – 4:45pm
Marek Metelski, Iwona Adamiec-Wójcik, Łukasz Drąg, Stanisław Wojciech	Application of RFEM to modeling dynamics of lattice boom offshore cranes	4:45pm – 5:00pm

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

DAY 2 – Wednesday, February 17, 2021		3:30pm – 5:00pm
Nonlinear dynamics and control 		Zoom Virtual Room (link TBA)
CONTROL OF NONLINEAR SYSTEMS II		
Chair: (TBA)		
Eduardo A. Petrocino , Jose M. Balthazar, Angelo M. Tusset, Mauricio Ribeiro, Paulo J. Gonçalves, Marcos Silveira, Willian Minnemann Kuhnert, Jan Awrejcewicz, Grzegorz Kudra	Vibration control of a cantilever beam coupled to a non-ideal power source by coil impedance matching	3:30pm – 3:45pm
Heather Harma, Subramanian Ramakrishnan	Dynamics and control of a planar soft robot: A nonlinear oscillator network model	3:45pm – 4:00pm
Erick Espinoza , Jonatan Pena Ramirez	Control and synchronization of underactuated inverted pendulums	4:00pm – 4:15pm
Althea Rustico, Massimiliano Formenti, Nicholas Fantuzzi , Antonio Ferreira	Dynamic actuation model for vibration reduction in offshore cranes	4:15pm – 4:30pm
Iwona Adamiec-Wójcik , Lucyna Brzozowska, Stanisław Wojciech	Influence of sea currents on the strategy of riser re-entry	4:30pm – 4:45pm
Myroslav Sparavalo	Concept of canonical Lyapunov functions in mathematical modelling and control design	4:45pm – 5:00pm

DAY 2 – Wednesday, February 17, 2021

3:30pm – 5:00pm

Recent trends in nonlinear dynamics


ENERGY HARVESTING III


Zoom Virtual Room
(link TBA)


Chair: (TBA)


Mohammad Khasawneh, Mohammed Daqaq	An Internally-Resonant Tunable Generator for Wave Energy Harvesting	3:30pm – 3:45pm
Manuel Serrano, Kevin Larkin, Sergei Tretiak, Abdessattar Abdelkefi	Nonlinear investigation on the dynamics and effectiveness of multifunctional energy harvesting gyroscopes	3:45pm – 4:00pm
Mohammad Bukhari, Oumar Barry	Self-tuning sliding mass electromagnetic energy harvester for dramatic frequency bandwidth enhancement	4:00pm – 4:15pm
X.Q. Wang, Yabin Liao, Marc P. Mignolet	Nonlinear reduced order modelling of a buckled piezoelectric beam for energy harvesting	4:15pm – 4:30pm
Tyler Alvis, Abdessattar Abdelkefi	Investigations on stoppers effects on energy harvesting absorbers when controlling vortex-induced vibrations of cylindrical structures	4:30pm – 4:45pm
Krzysztof Kecik, Andrzej Mitura	Effect of Linear and Non-linear Electromechanical Coupling in Magnetic Levitation Energy Harvester	4:45pm – 5:00pm


DAY 2 – Wednesday, February 17, 2021 – 5:15pm – 6:30pm


DAY 2 – Wednesday, February 17, 2021		5:15pm – 6:30pm
Concepts and methods in nonlinear dynamics 		Zoom Virtual Room (link TBA)
NONSMOOTH SYSTEMS III		
Chair: (TBA)		
Csaba Budai, Mate Antali, Gabor Stepan	Analysis of a friction oscillator with two frictional contacts	5:15pm – 5:30pm
Brian Saunders, Rui Vasconcellos, Robert Kuether, Abdessattar Abdelkefi	Insights on the dynamics of piecewise-smooth oscillators with continuous representations	5:30pm – 5:45pm
Makayla Ley, Mason Curtin, Megan Trujillo, Brian Saunders, Glen Throneberry, Abdessattar Abdelkefi	Influence of stopper hardness on the nonlinear dynamics of beam and plate systems	5:45pm – 6:00pm
Dzanko Hajradinovic, Miodrag Zukovic, Ivana Kovacic	Dynamical analysis of vibro-impact system with non-ideal excitation	6:00pm – 6:15pm
Bingyong Guo, Joseph Páez Chávez, Yang Liu	Grazing estimation algorithm for piecewise-smooth systems with time-delayed arguments	6:15pm – 6:30pm


DAY 2 – Wednesday, February 17, 2021		5:15pm – 6:30pm
Concepts and methods in nonlinear dynamics 		Zoom Virtual Room (link TBA)
NONLINEAR WAVES I		
Chair: (TBA)		
Vamsi Meesala, Muhammad R. Hajj, Shima Shahab	Investigation on the shock formation in acoustic energy transfer systems	5:15pm – 5:30pm
Dimitrios Chronopoulos	Guided wave interaction with nonlinearities and generation of harmonics in complex structures	5:30pm – 5:45pm
Annamaria Pau, Patrizia Trovalusci, Marco Pingaro	A multifield continuum model for the description of wave propagation in microcracked composite-material plate waveguides	5:45pm – 6:00pm
Domenico Tallarico, Bart Van Damme	Scattering from a pre-compressed elastica	6:00pm – 6:15pm
Nebojsa Dedovic	The wave front tracking method and Delta shocks	6:15pm – 6:30pm

DAY 2 – Wednesday, February 17, 2021		5:15pm – 6:30pm
Nonlinear dynamics of mechanical and structural systems 		Zoom Virtual Room (link TBA)
MECHANICAL SYSTEMS AND STRUCTURES III		
Chair: (TBA)		
Sotirios Natsiavas, Evangelos Koutras , Elias Paraskevopoulos	Co-simulation in mechanical systems with nonlinear components	5:15pm – 5:30pm
Jonathas Pereira, Renata Soares, Frederico Silva , Paulo Gonçalves	Influence of circumferential discontinuity of an elastic foundation on the nonlinear dynamics of cylindrical shells with functionally graded material	5:30pm – 5:45pm
Alexander Prokopenya	On dynamic equilibrium of the swinging Atwood machine	5:45pm – 6:00pm
Cesar Augusto Fonseca , Guilherme Rodrigues, Geraldo Rebouças, Marcelo Pereira, Americo Cunha Jr	Modelling and analysis of vibrations on an aerial cable car system with moving mass	6:00pm – 6:15pm
Jacqueline Bridge , Shivan Ramnarace	Thermal Vibration Response of an SMA beam	6:15pm – 6:30pm


DAY 2 – Wednesday, February 17, 2021		5:15pm – 6:30pm
Nonlinear dynamics of mechanical and structural systems 		Zoom Virtual Room (link TBA)
MULTIFUNCTIONAL STRUCTURES II		
Chair: (TBA)		
Olga Ganilova, Matthew Cartmell , Andrew Kiley	The development of a coupled dynamic model for thermoelastically loaded aluminium composite sandwich plates for satellite applications	5:15pm – 5:30pm
Giulia Lanzara , Alexandru Ungureanu	Sensing sound from materials with nanofibers	5:30pm – 5:45pm
Mason Curtin , Makayla Ley, Megan Trujillo, Brian Saunders, Glen Throneberry, Abdessattar Abdelkefi	Nonlinear orthotropic modeling and analysis of additively manufactured systems	5:45pm – 6:00pm
Sinem Mizrak , Ender Cigeroglu	Nonlinear natural frequencies of functionally graded axisymmetric annular microplates based on the modified couple stress theory	6:00pm – 6:15pm
Aleksandra Gawlik , Andrzej Klepka, Vsevolod Vladimirov, Sergii Skurativskyi	Forced transversal vibrations of von Karman plates with distributed spring-masses	6:15pm – 6:30pm


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


DAY 2 – Wednesday, February 17, 2021		5:15pm – 6:30pm
Recent trends in nonlinear dynamics 		Zoom Virtual Room (link TBA)
FRACTIONAL ORDER SYSTEM I		
Chair: (TBA)		
Carlos Sánchez-López	Generating fractional-order chaotic waveforms considering performance parameters of active devices	5:15pm – 5:30pm
Alex Elias-Zúñiga, Luis M. Palacios-Pineda, Daniel Olvera-Trejo, Oscar Martínez-Romero	Exact solution of the fractional cubic-quintic Duffing equation	5:30pm – 5:45pm
Julio Cesar Basilio, José Geraldo Telles Ribeiro, Americo Cunha Jr, Tiago Roux Oliveira	An optimal fractional LQR-based approach applied to a cart-pendulum system	5:45pm – 6:00pm
		6:00pm – 6:15pm
		6:15pm – 6:30pm


DAY 2 – Wednesday, February 17, 2021		5:15pm – 6:30pm
Special Session 		Zoom Virtual Room (link TBA)
COMPLEX DYNAMICS OF COVID-19: MODELING, PREDICTION AND CONTROL II		
Chair: (TBA)		
Cedrick Kwuimy, Foad Nazari, C Nataraj	Nonlinear dynamics characterization of a COVID-19 epidemiologic model with seasonality	5:15pm – 5:30pm
Yasser Aboelkassem , Haithem Taha	A cooperative epidemiological model of infectious disease dynamics: a COVID-19 case study	5:30pm – 5:45pm
Carla Pinto , Jose Machado	Adapted SIQR model for the dynamics of SARS-CoV-2 infection	5:45pm – 6:00pm
Khyar Omar , Allali Karam	Dynamic analysis of a three-strain COVID-19 SEIR epidemic model with general incidence rates	6:00pm – 6:15pm
Sylvia Faria , 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	6:15pm – 6:30pm


DAY 3 – Thursday, February 18, 2021 – 9:00am – 10:15am


DAY 3 – Thursday, February 18, 2021		9:00am – 10:15am
Concepts and methods in nonlinear dynamics 		Zoom Virtual Room (link TBA)
NONSMOOTH SYSTEMS IV		
Chair: (TBA)		
Huimin Zhang, 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, David Roze	A generic passive-guaranteed structure for elastoplastic friction models	9:15am – 9:30am
Wei Dai, Jian Yang	Vibration analysis of a multi-DOF impact oscillator with multiple linear constraints	9:30am – 9:45am
Dali Lv, Qichang Zhang	Design of NARX model for dry friction system of the three-piece bogie	9:45am – 10:00am
Run Liu	Double grazing bifurcations in a forced cantilever system with impacts	10:00am – 10:15am


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

DAY 3 – Thursday, February 18, 2021		9:00am – 10:15am
Concepts and methods in nonlinear dynamics 		Zoom Virtual Room (link TBA)
NONLINEAR WAVES II		
Chair: (TBA)		
Peng Ningning, Qing Pan, Chow K. W.	Computational studies on coupled triads in the dynamics of oceanic internal waves under the effects of density stratification	9:00am – 9:15am
Qing Pan, Ning Ning Peng, Chow K. W.	Analytical modelling of the dynamics of coupled triads in stratified fluids: Applications to oceanic waves	9:00am – 9:15am
Hui Wang	The influence of wave propagation on impact dynamics of repeated impacts on beams	9:00am – 9:15am
Ran Wang, Hu Ding, Yuan XueGang, Na Lv, Li-Qun Chen	Nonlinear singular travelling waves in a compressible thermo-hyperelastic cylindrical shell	9:00am – 9:15am
Shibam Manna	Effect of vorticity on peregrine breather for interfacial waves of finite amplitude	9:00am – 9:15am


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


DAY 3 – Thursday, February 18, 2021		9:00am – 10:15am
Nonlinear dynamics and control 		Zoom Virtual Room (link TBA)
CONTROL OF NONLINEAR SYSTEMS III		
Chair: (TBA)		
Arnaldo Casalotti, Francesco D'Annibale	Piezoelectric control of the Hopf bifurcation of the visco-elastic Beck beam	9:00am – 9:15am
Na Dong, Zhiqiang Wu, Yu Feng, Zhongke Gao, Celso Grebogi	Model-free adaptive control strategy for the temperature tracking control of Single-Effect LiBr/H2O absorption chiller	9:15am – 9:30am
Nikolay Bolotnik, Tatiana Figurina	Controllability of a two-body limbless crawler on an inclined rough plane	9:30am – 9:45am
Alexander Pesterev, Ivan Matrosoy, Yury Morozov	Stabilizing a pendulum-driven robot–wheel subject to control and phase constraint	9:45am – 10:00am
Srimanta Lal De, Shaikh Faruque Ali	A study on control of chaotic system	10:00am – 10:15am


DAY 3 – Thursday, February 18, 2021		9:00am – 10:15am
Nonlinear dynamics and control 		Zoom Virtual Room (link TBA)
NETWORKS SYNCHRONIZATION		
Chair: (TBA)		
De-Li Xuan, Ze Tang, Ju H. Park	Stabilizing-delay-based impulsive control for cluster synchronization of nonlinearly coupled Lur'e networks	9:00am – 9:15am
Andrei Bukh, Galina Strelkova, Vadim Anishchenko	Synchronization features of spiral and target wave structures	9:15am – 9:30am
Yong Zhao, Shanshan Ren, Lixia Duan	Finite-time synchronization for a class of memristor-based competitive neural networks with proportional delays	9:30am – 9:45am
Lixin Yang, Meng-meng Du	Analysis of dynamic resilience for oscillatory coupled network via phase difference	9:45am – 10:00am
		10:00am – 10:15am


DAY 3 – Thursday, February 18, 2021		9:00am – 10:15am
Special Session 		Zoom Virtual Room (link TBA)
COMPLEX DYNAMICS OF COVID-19: MODELING, PREDICTION AND CONTROL III		
Chair: (TBA)		
Weiyuan Ma , Yanting Zhao, Lihong Guo, YangQuan Chen	Forecast and analysis of the epidemics trend of COVID-19 by a two-sides fractional GSEIR model	9:00am – 9:15am
Haitao Song, Zhongwei Jia, Zhen Jin, Shengqiang Liu	Estimation of COVID-19 outbreak size in Harbin, China	9:15am – 9:30am
Ms Nilam , Kanica Goel	Time delayed SAIQR epidemic model of COVID-19	9:30am – 9:45am
Rohith G , K. B. Devika	Nonlinear Analysis and Control of COVID-19 Dynamics	9:45am – 10:00am
Yamin Ding , Yanmei Kang	Dynamical analysis of a COVID-19 epidemic model with social confinement and acquired immunity loss	10:00am – 10:15am


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


DAY 3 – Thursday, February 18, 2021		10:30am – 12:00pm
Concepts and methods in nonlinear dynamics 		Zoom Virtual Room (link TBA)
CHAOTIC SYSTEMS AND UNCERTAINTY II		
Chair: (TBA)		
Paul Meehan	Investigation of chaotic instability in brake squeal	10:30am – 10:45am
Derek Cyrus Gomes, G. Ambika	Frequency locking, quasi-periodicity and chaos due to special relativistic effects	10:45am – 11:00am
Wei Li	The statistical response of a three-dimensional REE model with random noise	11:00am – 11:15am
Shengli Chen, Wu Zhiqiang	A new method for charactering the joint probability density based on contour lines	11:15am – 11:30am
Evgeniya Pankratova	Environmentally induced chaos and amplitude death in neuronal network activity	11:30am – 11:45am
Irina Papkova, Tatyana Tatyana, Vadim Krysko, Anton Krysko	Chaos type identification in the contact interaction of closed cylindrical nanoshells embedded one into another with a gap between them.	11:45am – 12:00pm

DAY 3 – Thursday, February 18, 2021		10:30am – 12:00pm
Concepts and methods in nonlinear dynamics 		Zoom Virtual Room (link TBA)
BIFURCATION AND DYNAMIC INSTABILITY IV		
Chair: (TBA)		
Yaobing Zhao, Henghui Lin, Lincong Chen	Influence of temperature on bifurcation analysis of suspended cables close to two-to-one internal resonance	10:30am – 10:45am
Xi Wang, Jun Jiang, Ling Hong	Generalized cell mappings with subdivision and interpolation (GCM-SI) for global attractors in high dimensions of nonlinear systems	10:45am – 11:00am
Cinta Domínguez Moreno	A degenerate double-zero bifurcation in a normal form of Lorenz equations.	11:00am – 11:15am
Wieslaw Marszalek, Maciej Walczak, Jan Sadecki	Two-parameter 0-1 test and sample entropy bifurcation diagrams for nonlinear oscillating systems	11:15am – 11:30am
K Prabith, I R Praveen Krishna	Bifurcation studies of a nonlinear mechanical system subjected to multi-frequency-quasi-periodic excitations	11:30am – 11:45am
Denis Goldobin, Irina Tyulkina, Lyudmila Klimenko, Arkady Pikovsky	Generalization of the Ott-Antonsen theory: circular cumulant approach	11:45am – 12:00pm

DAY 3 – Thursday, February 18, 2021		10:30am – 12:00pm
Nonlinear dynamics of mechanical and structural systems 		Zoom Virtual Room (link TBA)
SYSTEM IDENTIFICATION AND SHM III		
Chair: (TBA)		
Sandor Beregi , David Barton, Djamel Rezgui, Simon Neild	Parameter identification in a physics-based model of aeroelastic flutter augmented with machine learnable structures	10:30am – 10:45am
Shuixiu Lu , Sebastian Oberst, Zongwei Luo	Recurrence plots and order patterns to identify the amplitude death in neural networks	10:45am – 11:00am
Ouyang Lei , Ningde Jin, Weikai Ren	Deep bi-directional long short-term memory neural network for multiphase flow pattern analysis from nonlinear time series	11:00am – 11:15am
Qinghua Liu , Fangyuan Hu, Junyi Cao, Xingjian Jing	Nonlinear restoring force subspace identification of negative stiffness nonlinear oscillators	11:15am – 11:30am
Rodrigo T. Rocha , Feras Alfosail, Wen Zhao, Mohammad Younis, Sami F. Masri	Nonparametric identification of a nonlinear MEMS resonator	11:30am – 11:45am
Manuel Pinto , Nicola Roveri, Gianluca Pepe, Antonio Carcaterra	A new approach for structural health monitoring: damage detection on large structures through a swarm of moving sensors	11:45am – 12:00pm

DAY 3 – Thursday, February 18, 2021		10:30am – 12:00pm
Nonlinear dynamics of mechanical and structural systems 		Zoom Virtual Room (link TBA)
MULTIFUNCTIONAL STRUCTURES III		
Chair: (TBA)		
MeiWen Teng , Yan Qing Wang (<i>Minikeynote</i>)	Nonlinear forced vibration of metal foam rectangular plates reinforced with graphene platelets	10:30am – 11:00am
Giulia Lanzara	Characterization of morphing nanocomposites under a quasi-static and impulsive magnetic field	11:00am – 11:15am
Ma Wensai , Zhang Wei	Complex dynamics of a bistable asymmetric laminated composite square panel	11:15am – 11:30am
Yaze Liu , Zhang Wei, Meiqi Wu	Dynamic snap-through of graphene-reinforced bistable composite laminates	11:30am – 11:45am
Sawan Kumar Guruva	Nonlinear damping characteristic of nanocomposite beams via dynamical analysis	11:45am – 12:00pm

DAY 3 – Thursday, February 18, 2021		10:30am – 12:00pm
Nonlinear dynamics of mechanical and structural systems 		Zoom Virtual Room (link TBA)
ROTATING SYSTEMS III		
Chair: (TBA)		
Bo Zhang, Hu Ding, Li-Qun Chen	Internal resonances of a rotating pre-deformed blade under a harmonic gas pressure	10:30am – 10:45am
Eugen Kremer	Stochastic resonances and antiresonances in rotating mechanisms	10:45am – 11:00am
Shibo Zhao, Xingmin Ren, Kuan Lu, Yongfeng Yang	A precise balancing technology of the rotor system based on multi modal analysis	11:00am – 11:15am
Qingyang Zheng, Yongfeng Yang, Jing Wang	Chebyshev convex method for rotor dynamic response with large convex uncertainties	11:15am – 11:30am
Zhiyuan Wu, Wen-Ming Zhang	Dynamic characteristics of the rotating cracked blade considering dovetail attachment	11:30am – 11:45am
Jun Jiang	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 		Zoom Virtual Room (link TBA)
NONLINEAR VIBRATIONS CONTROL III		
Chair: (TBA)		
Enora Denimal, Ludovic Renson, Loïc Salles	Topological optimisation of friction dampers for nonlinear resonance mitigation	10:30am – 10:45am
Noriyuki Tamaki, Hiroshi Yabuno	Nonlinear Stabilization of Hunting Motion of Railway Wheelset by Gyro-scopic Damper	10:45am – 11:00am
Giulia Stefani, Maurizio De Angelis, Ugo Andreaus	Experimental study on the influence of the gap in a vibro-impact system with two-sided constraints	11:00am – 11:15am
Zhuang Dong, Jian Yang, Dimitrios Chronopoulos	Suppression of vibration transmission between oscillators coupled with a nonlinear inerter-based joint	11:15am – 11:30am
Li-Qun Chen, Xiang Li, Hu Ding	Effects of a Vertically Moving NES Weight on Random Vibration Reduction	11:30am – 11:45am
Yiwei Zhao, Yongqiang Liu, Shaopu Yang	A New Semi-active Control Method of Yaw Damper in High-speed Railway Vehicle and its Experiment in Hardware-in-the-loop System	11:45am – 12:00pm

DAY 3 – Thursday, February 18, 2021

10:30am – 12:00pm

Recent trends in nonlinear dynamics


ENERGY HARVESTING IV


Zoom Virtual Room
(link TBA)


Chair: (TBA)


Kaiyuan Zhao , Qichang Zhang	Galloping piezoelectric energy harvester for low wind speed	10:30am – 10:45am
Mohammad Reyaz Ahmad Vali , Shaikh Faruque Ali	Harvesting energy from 2D-array of harvesters	10:45am – 11:00am
Lin-Chuan Zhao , Hong-Xiang Zou, Wen-Ming Zhang	Enclosed triboelectric-electromagnetic hybrid wave energy harvester using frequency-up mechanisms: Design and modeling	11:00am – 11:15am
Meng Li , Hong-Xiang Zou, Ke-Xiang Wei	Design and modeling of a compliant human motion energy harvester	11:15am – 11:30am
Santhosh B , I R Praveen Krishna	Generalized energy balanced method for a combined nonlinear vibration absorber energy harvester with nonlinear energy sink	11:30am – 11:45am
Qiong Wang , Lin-Chuan Zhao	A galloping piezoelectric energy harvester enhanced by the boundaries of triboelectric nanogenerators	11:45am – 12:00pm


DAY 3 – Thursday, February 18, 2021 – 12:15pm – 1:15pm


DAY 3 – Thursday, February 18, 2021		12:15pm – 1:15pm
Concepts and methods in nonlinear dynamics 		Zoom Virtual Room (link TBA)
FLUID-STRUCTURE INTERACTION III		
Chair: (TBA)		
Victoria Kurushina, Narakorn Srinil	Phenomenological multimode models for flexible pipelines transporting slug flows and undergoing vortex-induced vibrations	12:15pm – 12:30pm
Henrik Skyvulstad, Ole Øiseth	Nonlinear aerodynamic self-excited force modelling with higher-order convolutions	12:30pm – 12:45pm
Janis Viba, Grigory Panovko, Alexander Gouskov, Martins Irbe	Approximate model of flat ribbon vibrations in the wind	12:45pm – 1:00pm
Artem Nuriev, Airat Kamalutdinov	Nonlinear hydrodynamic damping of elastic vibrations of beams near a plane boundary	1:00pm – 1:15pm

DAY 3 – Thursday, February 18, 2021		12:15pm – 1:15pm
Concepts and methods in nonlinear dynamics 		Zoom Virtual Room (link TBA)
TRANSIENT DYNAMICS		
Chair: (TBA)		
Attila Genda , Alexander Fidlin, Oleg Gendelman	On the escape of a resonantly excited couple of particles from a potential well	12:15pm – 12:30pm
Zhifu Cao , Dong Jiang, Qingguo Fei, Rakesh K. Kapania, Hui Jin, Rui Zhu	Dynamic sensitivity analysis of transient responses for nonlinear structures	12:30pm – 12:45pm
Kevin Dekemele , Lennert De Knop, Patrick Van Torre, Mia Loccufier	Equivalence of grounded and non-grounded NES’s tuning and performance in mitigating transient vibrations	12:45pm – 1:00pm
Haopeng Zhang , 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 – 1:15pm
Concepts and methods in nonlinear dynamics 		Zoom Virtual Room (link TBA)
ANALYTICAL TECHNIQUES IV		
Chair: (TBA)		
Meng-Hsuan Tien, Kiran D'Souza	Analysis of general piecewise-linear nonlinear systems using a hybrid analytical-numeric computational method	12:15pm – 12:30pm
Eric Howard	Nonlinear aspects of one-dimensional supersymmetry	12:30pm – 12:45pm
Pavel Udalov, Ivan Popov, Alexey Lukin	A study of the self-oscillating regime in the problem of an atomic force microscope in the contact mode	12:45pm – 1:00pm
Lyudmila K. Kuzmina	Methods of stability theory in nonlinear systems dynamics	1:00pm – 1:15pm

DAY 3 – Thursday, February 18, 2021		12:15pm – 1:15pm
Nonlinear dynamics of mechanical and structural systems 		Zoom Virtual Room (link TBA)
MECHANICAL SYSTEMS AND STRUCTURES IV		
Chair: (TBA)		
Haoran Xu, Yuda Hu	Magnetoelastic nonlinear natural vibration analysis of an annular plate in induced non-uniform magnetic field	12:15pm – 12:30pm
Jiangming Jin, Tianwei Xie, Lawrence Bergman, Alexander Vakakis, Huancai Lu, D. Michael McFarland	Modeling and validation of a distributed coupling element for an acoustic system	12:30pm – 12:45pm
Oscar Zi Shao Ong, Mergen Ghayesh	Vibrations of a clamped-free double microbeam interconnected via a single spring	12:45pm – 1:00pm
Guangrong Chen, Sheng Guo, Bowen Hou, Junzheng Wang	Generalized slip model for legged robots	1:00pm – 1:15pm

DAY 3 – Thursday, February 18, 2021		12:15pm – 1:15pm
Nonlinear dynamics of mechanical and structural systems 		Zoom Virtual Room (link TBA)
MODAL INTERACTIONS AND ENERGY TRANSFER II		
Chair: (TBA)		
Feras Alfossail, Mohammad Younis	Modal interactions of inclined marine riser under vortex induced vibrations	12:15pm – 12:30pm
Xiaoyang Su, Houjun Kang	Modelling and nonlinear dynamic analysis of a cable considering the vibration of a damper	12:30pm – 12:45pm
Aravindan Muralidharan, Shaikh Faruque Ali	Theoretical investigations on an internally resonant piezoelectric energy harvester	12:45pm – 1:00pm
Baiyang Shi, Jian Yang	Vibration energy transmission between coupled beam structures with a nonlinear joint	1:00pm – 1:15pm

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

DAY 3 – Thursday, February 18, 2021

12:15pm – 1:15pm

Recent trends in nonlinear dynamics

METAMATERIALS I

Zoom Virtual Room
(link TBA)

Chair: (TBA)

Ada Amendola, Marco
Miniaci, Fernando
Fraternali, **Luca Placidi**

Heuristic homogenization for bandgap bi-atomic mass-spring systems and application to tensegrity meta-structure

12:15pm – 12:30pm

Kyriakos Alexandros Chondrogiannis, Vasilis Dertimanis, Boris Jeremic, Eleni Chatzi

On the vibration attenuation properties of metamaterial design using negative stiffness elements

12:30pm – 12:45pm

Valeria Settini, **Marco Lepidi**, Andrea Bacigalupo

Nonlinear wave propagation in metamaterial waveguides with inertia amplification


12:45pm – 1:00pm


Chang Quan Lai


Nonlinear mechanical response of rotation-dominated chiral lattices


1:00pm – 1:15pm


DAY 3 – Thursday, February 18, 2021 – 3:30pm – 5:00pm


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

DAY 3 – Thursday, February 18, 2021		3:30pm – 5:00pm
Concepts and methods in nonlinear dynamics 		Zoom Virtual Room (link TBA)
COMPUTATIONAL NONLINEAR DYNAMICS V		
Chair: (TBA)		
Francesco Latini, Jacopo Brunetti, Walter D'Ambrogio, Annalisa Fregolent	Nonlinear dynamic substructuring with localized nonlinearities	3:30pm – 3:45pm
Suguang Dou	An improved formulation for structural optimization of nonlinear dynamic response	3:45pm – 4:00pm
Paolo Di Re, Daniela Addessi, Cristina Gatta	Enriched Vlasov beam model for nonlinear dynamic analysis of thin-walled structures	4:00pm – 4:15pm
Tetyana Shmatko, Lidiya Kurpa, Jan Awrejcewicz	Nonlinear vibration of functionally graded shallow shells resting on elastic foundations	4:15pm – 4:30pm
Ajit Kumar, Ajoy Kanti Ghosh	NARX-ANN based non-linear aerodynamic modeling using flight test data	4:30pm – 4:45pm
Carlos Argáez, Peter Giesl, Sigurdur Freyr Hafstein	WendlandXool: Simplified C++ code to compute Wendland functions	4:45pm – 5:00pm


DAY 3 – Thursday, February 18, 2021		3:30pm – 5:00pm
Concepts and methods in nonlinear dynamics 		Zoom Virtual Room (link TBA)
NONLINEAR WAVES III		
Chair: (TBA)		
Stefano Lenci, Francesco Clementi	Wave motion in a beam on a tensionless foundation	3:30pm – 3:45pm
Sandra Carillo, Cornelia Schiebold	Construction of soliton solutions of the matrix Korteweg-de Vries and modified Korteweg-de Vries equations	3:45pm – 4:00pm
Piotr Rozmej, Anna Karczewska	KdV, extended KdV, 5th-order KdV and Gardner equations generalized for uneven bottom versus corresponding Boussinesq's equations	4:00pm – 4:15pm
Ivan Gandzha, Yuri Sedletsky	A multi-time Hamiltonian approach to the derivation of a high-order nonlinear Schrodinger equation for the envelope of slowly modulated wave trains	4:15pm – 4:30pm
El Achab Abdelfattah	Weierstrass elliptic function method for solving generalized Korteweg-de-Vries equation with dual power law nonlinearity	4:30pm – 4:45pm
Harold Blas, Martin Cerna, Luis Fernando dos Santos	Modified non-linear Schrodinger models, CPT symmetry and anomalous charges	4:45pm – 5:00pm


DAY 3 – Thursday, February 18, 2021		3:30pm – 5:00pm
Nonlinear dynamics of mechanical and structural systems 		Zoom Virtual Room (link TBA)
EXPERIMENTAL DYNAMICS II		
Chair: (TBA)		
Lezheng Fang , Alireza Mojahed, Amir Darabi, Alexander Vakakis, Michael Leamy	Experimental non-reciprocity in a geometrically nonlinear system composed of elastically-coupled rotators	3:30pm – 3:45pm
Aarushi Bhargava , Vamsi Meesala, Muhammad R. Hajj, Shima Shahab	Experimental analysis of a high-intensity focused ultrasound power transfer system	3:45pm – 4:00pm
Hunter Sedillo , Abdessattar Abdelkefi, Kaleb Jankowski, Adam Takeshita, Adam Bouma, Jacob Barba	Numerical and experimental investigations on bolted connections of BARC structures	4:00pm – 4:15pm
Ravindra Masana , Shadi Khazaaleh, Mohammed Daqaq	Origami springs - Statics and dynamics	4:15pm – 4:30pm
Giuseppe Avon , Luigi Fortuna, Arturo Buscarino	Experimental characterization of nonlinear pilot induced oscillations using a flight simulator	4:30pm – 4:45pm
Rafal Radecki , Michael Leamy, Pawel Packo, Andrzej Klepka	Investigation of shear wave interaction at a frictional hysteretic interface	4:45pm – 5:00pm


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


DAY 3 – Thursday, February 18, 2021		3:30pm – 5:00pm
Recent trends in nonlinear dynamics 		Zoom Virtual Room (link TBA)
STOCHASTICITY AND NOISE I		
Chair: (TBA)		
Balint Kaszas, George Haller	Universal upper estimate for prediction errors under moderate model uncertainty	3:30pm – 3:45pm
Vipin Agarwal, Bala Balachandran	From chaotic dynamics to periodic dynamics: noise assisted response steering	3:45pm – 4:00pm
Alexis-Tzianni Charalampopoulos, Themistoklis Sapsis	Physically informed data-based closure schemes for turbulent systems	4:00pm – 4:15pm
Abdulrahman Alofi, Gizem Acar, Bala Balachandran	Noise influenced dynamics of two coupled oscillators	4:15pm – 4:30pm
Dario De Domenico, Giuseppe Quaranta, Giuseppe Ricciardi, Walter Lacarbonara	Optimal design and seismic performance of nonlinear TMD with pinched hysteresis	4:30pm – 4:45pm
		4:45pm – 5:00pm


DAY 3 – Thursday, February 18, 2021 – 5:15pm – 6:30pm


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


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

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


DAY 3 – Thursday, February 18, 2021		5:15pm – 6:30pm
Nonlinear dynamics of mechanical and structural systems 		Zoom Virtual Room (link TBA)
MECHANICAL SYSTEMS AND STRUCTURES V		
Chair: (TBA)		
Nidish Narayanaa Balaji, Matthew R. W. Brake	Nonlinear modal analysis through the generalization of the eigenvalue problem: applications for dissipative dynamics	5:15pm – 5:30pm
Francesco Danzi, James Gibert	Nonlinear and Nonplanar Dynamics of Double-Tapered Beams	5:30pm – 5:45pm
Fotios Georgiades	Augmented perpetual manifolds of mechanical systems	5:45pm – 6:00pm
Marek Metelski, Łukasz Drąg, Stanisław Wojciech	Dynamic models of the cranes applied to offshore wind farm service	6:00pm – 6:15pm
Uğurcan Eroğlu, Giuseppe Ruta	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 		Zoom Virtual Room (link TBA)
SYSTEM IDENTIFICATION AND SHM IV		
Chair: (TBA)		
Zihan Liu, T. Haj Mohamad, Shahab Ilbeigi, C. Nataraj	Proper and smooth orthogonal decompositions for detection of gear system defects in rotating machinery	5:15pm – 5:30pm
Alex Binder, Micah Cheng-Guajardo , Matthew Vasquez, Samantha Ceballes, Sandra Zimmerman, Abdessattar Abdelkefi	Insights on the geometric and material input probability uncertainties effects on the nonlinear dynamical responses of beams	5:30pm – 5:45pm
Michael Souza , 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	5:45pm – 6:00pm
Diego Matos S. L. , Americo Cunha Jr	On the physical consistency of evolution laws obtained with sparse regression	6:00pm – 6:15pm
Federica Mezzani , Gianluca Pepe, Nicola Roveri, Antonio Carcaterra	Mine clearance through an artificial intelligence flying drone	6:15pm – 6:30pm


DAY 3 – Thursday, February 18, 2021		5:15pm – 6:30pm
Recent trends in nonlinear dynamics 		Zoom Virtual Room (link TBA)
BIOCAPSULE ROBOTS II		
Chair: (TBA)		
Yang Liu, Dimosthenis Tsalagradas , Jiyuan Tian, Jiajia Zhang, Bingyong Guo	Investigation of force magnification for the vibro-impact capsule system using FEA	5:15pm – 5:30pm
Jiyuan Tian , Yang Liu, Bingyong Guo, Shyam Prasad	Finite element modelling of a vibro-impact capsule moving in the small intestine	5:30pm – 5:45pm
Yang Liu , Joseph Páez Chávez, Jiajia Zhang, Jiyuan Tian, Bingyong Guo, Shyam Prasad	Optimisation verification for a millimetre-scale vibro-impact capsule system	5:45pm – 6:00pm
Jiajia Zhang , Jiyuan Tian, Bingyong Guo, Yang Liu, Shyam Prasad	Development of a vibro-impact self-propelled capsule in millimetre scale	6:00pm – 6:15pm
Joseph Páez Chávez	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 		Zoom Virtual Room (link TBA)
BIOLOGICAL SYSTEMS DYNAMICS II		
Chair: (TBA)		
Martin Garrad, Ludovic Renson, Helmut Hauser	Nonlinear dynamics of a synthetic spider web	5:15pm – 5:30pm
Ehsan Askari, Michael S. Andersen	A forward dynamics methodology to study nonlinear dynamics and wear of total knee arthroplasties	5:30pm – 5:45pm
Hina Shaheen, Roderick Melnik	Mathematical modeling of calcium-mediated exosomal dynamics in neural cells	5:45pm – 6:00pm
Shady Ahmed, Omer San, Sivaramakrishnan Lakshmivarahan	Forward sensitivity analysis of the FitzHugh-Nagumo system	6:00pm – 6:15pm
Lavinia Birdac	Stability of equilibria in an infinite dimensional network of theta neurons	6:15pm – 6:30pm


DAY 4 – Friday, February 19, 2021 – 9:00am – 10:15am


DAY 4 – Friday, February 19, 2021		9:00am – 10:15am
Nonlinear dynamics of mechanical and structural systems 		Zoom Virtual Room (link TBA)
MULTISTABLE OSCILLATORS		
Chair: (TBA)		
Ayman Nasir, Neil Sims, David Wagg	Exploring the dynamics of viscously damped nonlinear oscillators via damped backbone curves: A normal form approach	9:00am – 9:15am
Ravindra Masana, Shadi Khazaaleh, Mohammed Daqaq	Origami inspired mechanical switches and their dynamics	9:15am – 9:30am
Ma Wensai, Zhang Wei	Complex dynamics of a bi-stable asymmetric laminated composite square panels	9:30am – 9:45am
Ilham Kirrou, Mohamed Belhaq	Quasiperiodic stability in nonlinear delayed coupled oscillators	9:45am – 10:00am
Vaibhav Tandel, Jayaprakash K R	Dynamics of escape from a magnetic double-well potential	10:00am – 10:15am

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


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


DAY 4 – Friday, February 19, 2021		09:00am – 10:15am
Recent trends in nonlinear dynamics 		Zoom Virtual Room (link TBA)
STOCHASTICITY AND NOISE II		
Chair: (TBA)		
Xiao-Ming Liu	Periodic solution of Mathieu system induced by fuzzy uncertainty	09:00am – 09:15am
Mahashweta Patra, Sayan Gupta	Stochastic bifurcations in three-dimensional piecewise smooth systems	09:15am – 09:30am
Ya-Hui Sun, Yong-Ge Yang, Ling Hong, Wei Xu	Stochastic Averaging for a fractional-order vibro-impact oscillator subject to colored noise excitation	09:30am – 09:45am
Shengli Chen, Wu Zhiqiang	A new method for characterizing the joint probability density based on contour lines	09:45am – 10:00am
Varun H S, Aswathy M. S., Sunetra Sarkar	Stochastic bifurcation in an aeroelastic system with additive noise.	10:00am – 10:15am


DAY 4 – Friday, February 19, 2021		09:00am – 10:15am
Recent trends in nonlinear dynamics 		Zoom Virtual Room (link TBA)
NONLINEAR PHENOMENA IN BIO- AND ECO-SYSTEMS DYNAMICS II		
Chair: (TBA)		
Zayneb Brari	Automatic detection of epilepsy and epileptic seizures using a new method for Correlation Dimension determination and Piecewise Linear Classifier	09:00am – 09:15am
Swati Mishra, Ranjit Kumar Upadhyay	Modeling the fear induced spatiotemporal dynamics of three-species agroecosystems	09:15am – 09:30am
Manoj Kumar, Syed Abbas	Optimal control in a size structured population model with time dependent diffusion rate	09:30am – 09:45am
Giuseppe Orlando	Simulating corporate dynamics via the Rulkov map	09:45am – 10:00am
		10:00am – 10:15am


DAY 4 – Friday, February 19, 2021		9:00am – 10:15am
Special Session 		Zoom Virtual Room (link TBA)
COMPLEX DYNAMICS OF COVID-19: MODELING, PREDICTION AND CONTROL IV		
Chair: (TBA)		
Xianbo Liu, Guang Meng, Bala Balachandran	Multi-phase dynamics of COVID-19 and data-driven forecasts	9:00am – 9:15am
Rohith G, K. B. Devika	Dynamics and impact of quarantine compartments in the control of COVID-19 spread	9:15am – 9:30am
Ms Nilam, Mrs Swati	Fractional order SIR epidemic model for COVID-19	9:30am – 9:45am
Guojian Ren, Yongguang Yu, Xiangyun Meng	A stochastic heterogeneous node-based generalized SIR model in switching network for COVID-19	9:45am – 10:00am
Ivan Gandzha, Oleksandr Kliushnichenko, Sergey Lukyanets	The effect of multiple characteristic time scales on the nonlinear dynamics of epidemics	10:00am – 10:15am


DAY 4 – Friday, February 19, 2021 – 10:30am – 12:00pm


DAY 4 – Friday, February 19, 2021		10:30am – 12:00pm
Concepts and methods in nonlinear dynamics 		Zoom Virtual Room (link TBA)
FLUID-STRUCTURE INTERACTION V		
Chair: (TBA)		
Harry Carpenter , Alireza Gholipour, Mergen Ghayesh, Anthony Zander, Peter Psaltis	Effect of nonlinear blood viscosity on LDL transport and fluid-structure interaction biomechanics in a multi-stenosis left circumflex coronary artery	10:30am – 10:45am
Xiaochen Wang , Mergen Ghayesh, Anthony Zander, Andrei Kotousov	Wall shear stress for an aorta with aneurysms via fluid-structure analysis	10:45am – 11:00am
Anandamoy Mukhopadhyay , Souradip Chattopadhyay, Amlan K. Barua	Effects of strong viscosity with variable fluid properties on falling film instability	11:00am – 11:15am
Shashidhar Reddy Rajidi , Abhay Gupta, Satyajit Panda	Nonlinear dynamics of cross-flow heat exchanger tube conveying fluid	11:15am – 11:30am
Caishan Liu	Self-excited vibration of a rotating disk	11:30am – 11:45am
Weng Song , Maolin Liao	Dynamics of the fluid-structure coupling model of a direct-acting relief valve	11:45am – 12:00pm


DAY 4 – Friday, February 19, 2021		10:30am – 12:00pm
Concepts and methods in nonlinear dynamics 		Zoom Virtual Room (link TBA)
CHAOTIC SYSTEMS AND UNCERTAINTY IV		
Chair: (TBA)		
Zhao Chaofeng , Ren Hai-Peng	Weakness analyzing and performance improvement for image encryption using chaos crossing cylinder	10:30am – 10:45am
Ruimin Xu , Rongwei Guo	Robust mean field game theory for nonlinear stochastic dynamical systems	10:45am – 11:00am
Dionysios Sourailidis , Christos Volos, Lazaros Moysis, Ioannis Stouboulos	Nonlinear phenomena and chaos in a tumor growth model	11:00am – 11:15am
Biswarup Bhattacharyya , Eric Jacquelin, Denis Brizard	A surrogate approach for stochastic modeling of a crash box under impact loading in the time domain	11:15am – 11:30am
Kamila Szewczyk , Artur Durajski, Konrad Gruszka, Radosław Szczęśniak	Classical charged particle in highly nonlinear potential: nonlocal effects induced by the Abraham-Lorentz force	11:30am – 11:45am
Rongwei Guo , Yi Qi	Projective synchronization of a class of complex-variable chaotic systems by the UDE-based dynamic control method	11:45am – 12:00pm

DAY 4 – Friday, February 19, 2021		10:30am – 12:00pm
Nonlinear dynamics of mechanical and structural systems 		Zoom Virtual Room (link TBA)
AEROSPACE STRUCTURES		
Chair: (TBA)		
Xiumin Gao, Haojie Liu	Nonlinear dynamic analysis of a rigid-flexible antenna system with internal resonances	10:30am – 10:45am
Anton Doroshin	Unloading the angular momentum of spacecraft using internal gravitational dampers	10:45am – 11:00am
Bole Ma, Baozeng Yue, Yong Tang, Jiarui Yu	Studies on the liquid sloshing and rigid-liquid-flexible coupling dynamics of spacecraft	11:00am – 11:15am
Ti Chen	Continuous leaderless synchronization control of multiple spacecraft on SO(3)	11:15am – 11:30am
Hui Ren, Tengfei Yuan, Kai Yang	Dynamics of flexible electric solar wind sails	11:30am – 11:45am
Gianluca Pepe, Elena Paifelman, Antonio Carcaterra	Aeroelastic dynamic feedback control of a Volterra’s airfoil	11:45am – 12:00pm

DAY 4 – Friday, February 19, 2021		10:30am – 12:00pm
Nonlinear dynamics and control 		Zoom Virtual Room (link TBA)
NONLINEAR VIBRATIONS CONTROL V		
Chair: (TBA)		
Zhang Guoqi, Wu Zhiqiang	Multi-mode vortex induced vibration control of flexible riser with nonlinear energy sink	10:30am – 10:45am
Muqing Niu, Li-Qun Chen	Nonlinear vibration isolation via compliant mechanisms and wire ropes	10:45am – 11:00am
Kan Ye, J.C. Ji	Dynamic analysis of a frictional oscillator subject to a novel zero-stiffness vibration isolator	11:00am – 11:15am
Santhosh B, Rony Philip, Bipin Balaram	Dynamics and Performance Analysis of a Nonlinear Energy Sink with Geometric Nonlinear Damping	11:15am – 11:30am
Amin Moslemi, Siamak Esmaeilzadeh Khadem, Mostafa Khazaei, Atoosa Davarpanah	Investigation the vibration behavior of a modified nonlinear energy sink on a simply supported beam	11:30am – 11:45am
Jian Peng, Junhui Tong, Lianhua Wang, Hongxin Sun	Time delay-based mitigation design and nonlinear resonance of large amplitude vibration of the cable-stayed beam	11:45am – 12:00pm

DAY 4 – Friday, February 19, 2021		10:30am – 12:00pm
Recent trends in nonlinear dynamics 		Zoom Virtual Room (link TBA)
VEHICLE DYNAMICS		
Chair: (TBA)		
Walter Wedig	Multiple Sommerfeld effects in nonlinear vehicle road dynamics	10:30am – 10:45am
Alois Steindl	Slow-fast dynamics of an oversteer vehicle	10:45am – 11:00am
Zhongji Li, Hao Dong	Nonlinear vibration and control of maglev vehicle-switch beam coupling system	11:00am – 11:15am
Sivakoteswararao Ikkurthi, Priyank Prakash, Ashok Kumar Pandey	Analysis of half-car model with nonlinear damper under sinusoidal road excitation	11:15am – 11:30am
Jinhai Wang, Jianwei Yang	Hopf bifurcation and hunting stability of railway vehicle wheelsets negotiating curve	11:30am – 11:45am
Yunfan Yang, Yu Sun, Liang Ling, Tao Zhang, Kaiyun Wang, Wanming Zhai	Nonlinear contact analysis of heavy-haul locomotive wheel/rail dynamic interactions under changeable friction conditions	11:45am – 12:00pm

DAY 4 – Friday, February 19, 2021		10:30am – 12:00pm
Recent trends in nonlinear dynamics 		Zoom Virtual Room (link TBA)
FRACTIONAL ORDER SYSTEM II		
Chair: (TBA)		
Marina Shitikova, Vladimir Kandu	Nonlinear vibrations of a cylindrical pipe embedded in a fractional derivative medium	10:30am – 10:45am
Zhe Zhang, Toshimitsu Ushio, Jing Zhang, Feng Liu	Novel asymptotic stabilization conditions of nonlinear fractional-order composite systems via the decentralized control	10:45am – 11:00am
Landi Bai, Jing Ma, Ningde Jin	Characterization of oil-in-water two-phase flow by using multiscale fractional order weighted permutation entropy analysis	11:00am – 11:15am
Xiaojun Liu, Ling Hong, Lixin Yang, Dafeng Tang	Bifurcation and synchronization of a fractional-order system	11:15am – 11:30am
Marina Shitikova, Anastasiya Krusser	The effect of boundary conditions on nonlinear vibrations of plates on a viscoelastic base via the fractional calculus standard linear solid model	11:30am – 11:45am
Deepika Deepika	Fractional order chaos suppression via variable inverse tangential power based fractional order sliding mode controller	11:45am – 12:00pm

DAY 4 – Friday, February 19, 2021		10:30am – 12:00pm
Recent trends in nonlinear dynamics 		Zoom Virtual Room (link TBA)
BIOLOGICAL SYSTEMS DYNAMICS III		
Chair: (TBA)		
Umesh Kumar Verma, G. Ambika	Dynamical transitions in multilayer neuronal networks	10:30am – 10:45am
Carla Pinto, João Maurício de Carvalho	Dynamics of cancer cells in HIV-infected patients for distinct immune responses	10:45am – 11:00am
Alexander Korotkov, Levanova Tatiana, Grigory Osipov	Effects of memristor-based coupling in the ensemble of FitzHugh-Nagumo elements	11:00am – 11:15am
Zilu Cao, Lin Du	Electrical activities and magnetic stimulation effects in a CBGT neural network	11:15am – 11:30am
Sunsu Kurian Thottil, Rose P. Ignatius	Electromagnetic induction on neurons through field coupling and Memristor	11:30am – 11:45am
		11:45am – 12:00pm