14th International Conference on Vibration Engineering and Technology of Machinery
Lisbon, Portugal, 10-13 September 2018

Programme

Prepared by
Nuno Maia and Zuzana Dimitrovová
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Welcome Message

We are pleased to welcome you to Lisbon for the 14th International Conference on Vibration Engineering and Technology of Machinery (VETOMAC XIV) held at Instituto Superior Técnico of the University of Lisbon under the joint organization of IDMEC - Institute of Engineering Mechanics, Instituto Superior Técnico, University of Lisbon (IDMEC/IST/UL) and the Department of Civil Engineering, Faculdade de Ciências e Tecnologia, Universidade Nova de Lisboa (DEC/FCT/UNL).

The main objective of the conference is to bring together researchers and engineers devoting their work to vibration-related problems in different areas of engineering applications on a common platform.

We strongly believe that VETOMAC XIV will have a significant impact on the development of contemporary analytical, numerical and experimental methods in vibration problems, and will also create an opportunity for opening a forum for discussion and collaboration amongst the participants.

Lisbon is a beautiful city, we wish you to enjoy the event.

Yours Sincerely,

Nuno Maia and Zuzana Dimitrovová
Organization

Organizing Institutions
- IDMEC/IST – Institute of Mechanical Engineering/Instituto Superior Técnico
- DEC/FCT – Department of Civil Engineering/Faculdade de Ciências e Tecnologia

Sponsors
- CGD - Caixa Geral de Depósitos
- Banco BPI
- IST - Instituto Superior Técnico
- CML - City Council of Lisbon (Câmara Municipal de Lisboa)
- EGEAC - Culture in Lisbon
- Museum of Lisbon - Pimenta Palace (Museu de Lisboa – Palácio Pimenta)
- Tourism of Lisbon (Turismo de Lisboa)
- SPECMAN
- Brüel & Kjær

Supporting Institutions
- The Vibration Institute of India
- IP, S.A.- Infraestruturas de Portugal (Portuguese Infrastructures)
- GEOSIN geosynthetics
- TENCATE materials that make a difference
- BBF Technology for environment
- Sotecnisol materiais
- LNEC – Laboratório Nacional de Engenharia Civil (National Laboratory of Civil Engineering)

Committees

Steering Committee
- **Prof. Jammi Srinivasa Rao** (J.S. Rao) AICTE-INAe Distinguished Visiting Professor (Chair)
  BMS College of Engineering, Bangalore and Reva University, Bangalore, India
- **Prof. Ronald L. Eshleman**
  Principal adviser of JVET, Technical Director for Training, Vibration Institute, IL, USA
- **Prof. José M. Balthazar**
  Mechanical-Aeronautics Division, Aeronautics Technological Institute (ITA), SP, Brasil
- **Prof. Chee Wah Lim**
  Department of Architecture and Civil Engineering, City University of Hong Kong, Hong Kong, China
- **Prof. C. Nataraj**
  Director of the The Villanova Center for Analytics of Dynamic Systems (VCADS), University of Villanova, PA, USA
- **Prof. Romuald Rządkowski**
  Head of the Aeroelasticity Department, Institute of Fluid Flow Machinery, Polish Academy of Sciences, Gdansk, Poland
- **Prof. Jyoti K. Sinha**
  Head of the Dynamics Laboratory, School of Mechanical, Aerospace and Civil Engineering (MACE), The University of Manchester, Manchester, UK
Organizing Committee

- Nuno Maia - DEM/IST/UL and IDMEC/IST (Chairperson)
- Zuzana Dimitrovová - DEC/FCT/UNL and IDMEC/IST (Chairperson)

Scientific Committee

Douglas E. Adams, Vanderbilt University, USA
Sondipon Adhikari, Swansea University, UK
José M. Balthazar, Aeronautics Technological Institute, SP, Brasil
Walter Bartelmus, Wroclaw University of Technology, Poland
Sanjin Braut, University of Rijeka, Croatia
Steven Chatterton, Politecnico di Milano, Italy
Ashish K. Darpe, Indian Institute of Technology Delhi, India
Geert Degrande, Catholic University of Leuven, Belgium
Zuzana Dimitrovová, Nova University of Lisbon, Caparica, Portugal
Régis Dufour, INSA, Lyon, France
Mohamed El Badaoui, Jean Monnet University, France
Ronald L. Eshleman, Vibration Institute, IL, USA
Michael I. Friswell, Swansea University, UK
Mergen H. Ghayesh, University of Adelaide, Adelaide, Australia
Fengshou Gu, University of Huddersfield, UK
Wolfgang Hahn, EDF Energy, London, UK
Tianjian Ji, University of Manchester, UK
Dani Juničič, Jozef Stefan Institute, Slovenia
Piotr Koziol, Cracow University of Technology, Krakow, Poland
Arthur W. Lees, Swansea University, UK
Chee Wah Lim, City University of Hong Kong, Hong Kong, China
Nuno Maia, University of Lisbon, Lisbon, Portugal
Cristinel Mares, Brunel University, London, UK
Traian Mazilu, Universitatea Politehnica Bucuresti, Romania
David U. Mba, London South Bank University, UK
Guang Meng, Shanghai Jiao Tong University, China
Andrei V. Metrikine, Delft University of Technology, The Netherlands
Amiya R. Mohanty, Indian Institute of Technology Kharagpur, India
John Mottershead, University of Liverpool, UK
Prasanna M. Mujumdar, Indian Institute of Technology, Bombay, India
Jiří Náprstek, The Institute of Theoretical and Applied Mechanics, Czech Republic
C. Nataraj, Villanova University, USA
Huajiang Ouyang, University of Liverpool, UK
Zhi Ke Peng, Shanghai Jiao Tong University, China
Evgeny P. Petrov, University of Sussex, UK
Robert B. Randall, University of New South Wales, Australia
J.S. Rao, Reva University, Bangalore, India
Romuald Rządkowski, Polish Academy of Sciences, Gdansk, Poland
Jerzy T. Sawicki, Cleveland State University, USA
A.S. Sekhar, Indian Institute of Technology Madras, India
Alok Sinha, Pennsylvania State University, USA
Jyoti K. Sinha, University of Manchester, Manchester, UK
Michał Steenbergen, Delft University of Technology, The Netherlands
Rajiv Tiwari, Indian Institute of Technology, Guwahati, India
Mariam Wiercigroch, University of Aberdeen, UK
Ye Ping Xiong, University of Southampton, UK
Jong-Dar Yau, Tamkang University, New Taipei City, Taiwan
Jaroslav Zapoměl, VSB-Technical University of Ostrava, Czech Republic
Radoslaw Zimroz, KGHM CUPRUM, Wroclaw, Poland
General Information

The VETOMAC XIV takes place in the Congress Centre situated in the Alameda Campus of the Instituto Superior Técnico. The Congress Centre is in the Civil Engineering Building (see the plan on the next page with the address:

- Congress Center
  (Civil Engineering Building)
  Instituto Superior Técnico
  Av. Rovisco Pais 1
  1049-001 Lisboa

Registration Opening Hours
- Mon. 10 September, 10:00-17:30
- Tues. 11 September, 08:30-17:30
- Wed. 12 September, 08:30-17:30
- Thurs., 13 September, 08:30-17:30

VETOMAC XIV Account Department
IDMEC – Institute of Mechanical Engineering
Instituto Superior Técnico
Av. Rovisco Pais 1, 1049-001 Lisboa, Portugal
Ph: +351 218417351

Email: idmec@tecnicoulisboa.pt

VETOMAC XIV Secretariat
Email: vetomac@campus.fct.unl.pt
Web: http://www.conf.pt/index.php/vetomac

Coffee-Breaks
The coffee-breaks will take place in the Halls 1 and 2 of the Conference Center (See the map of Conference Floor Plan on page 7) and will be open to all participants. Kindly wear your Conference Badge.

Lunches
The Lunch tickets included in the package received during the registration will be honored at the two restaurants 1 and 2 marked on the Alameda Campus Map in page 6. Note that the lunch tickets have different colors for the different days of the conference and are valid only for the day printed in the front. If you do not have lunch tickets you can have lunch in any of the three restaurants.

Alameda Campus (map on the next page)
You can enter the Alameda Campus from four sides. You can enter the Civil Engineering Building, where the Congress Center is located, from two sides. If you enter from the East, you have to go down to Floors -1 and -2. If you enter from the West, you enter directly the Congress Center in the floor -2.
1. Central Building
2. Civil Engineering Building
3. North Garden Building
4. Mechanical Engineering Building I
5. North Tower
6. Electrical Engineering Building
7. Informatics Building II
8. Mechanical Engineering Building IV
9. Informatics Building I
10. Informatics Building III
11. Mechanical Engineering Building II
12. Mechanical Engineering Building III
13. Student Canteen
14. Student Association Building
15. Games Campus
16. Pool
17. Social Association Building
18. Copy Centre
19. Mine Engineering Building
20. South Tower
21. Chemical Engineering Building
22. South Garden Building
23. Children Garden
24. Building of Mathematics
25. Building of Physics
26. Interdisciplinary Complex
Conference Floor Plan

S - Secretariat
AR - Administration Room

Presentation Rooms
GA - Main Auditorium
VA1
VA2
2.2

Floor -1
Floor -2

Entrance to the building from West

Lower Entrance to GA

Hall1
Hall2

VA1
VA2
How to find a specific presentation in the programme
Go to the Authors Index, find the name of the participant and you will see the information about the presentation id, MS/TP, presentation room, day and time.

How to find the presentation room
Consult the Conference Floor Plan on page 7.

Where to check your emails
You will be able to access wireless network and thus be able to check emails on your notebook.

Wireless Internet Access

Step 1: From available wireless networks select the Guest network and press connect.

Step 2: Open your browser. You should see the following screen. If not, go to https://wifi.tecnico.ulisboa.pt/

Step 3: Press the blue button “Ligar”

Step 4: Enter the credentials
Account name: VETOMAC-XIV
Password: rcj4Hd

Step 5: Enjoy

Where to upload your presentation
It is the participants’ responsibility to upload the presentation in the presentation room before their session begins. Each room will be equipped with a desktop computer. In each presentation room a conference staff member will be there to assist you. Kindly note that you will not be allowed to use your own notebook for the presentation.

How to submit the paper to a special issue
Submissions to special issues will only be possible after the Conference is over. Prospective authors will be encouraged to improve, extend and revise their papers by taking into account discussions during the event. Prospective authors should complete these revisions within two months after the conference. Kindly contact the person responsible for a specific issue (listed below) for more details.

- Journal of Vibration Engineering & Technologies (JVET)
  Zuzana Dimitrovová (zdim@fct.unl.pt)

- International Journal of Nonlinear Dynamics and Control (IJNDC)
  José Manoel Balthazar (jmbaltha@gmail.com, jmbaltha@ita.br)
Social Programme

Important: Please do not forget to bring your Tickets for Welcome drink and/or Banquet.

Welcome Drink: 10 September, 18h00-20h30
Welcome Drink will be held on 10 September in Museum Gardens of the city of Lisbon (Jardins do Museu de Lisboa – Palácio Pimenta) adjacent to the City Museum. Besides light refreshment, the participants may enjoy walking through the garden. This renovated gardened area in Lisbon features larger than life size ceramic replicas of the animal kingdom inspired by Portuguese caricaturist and ceramist Rafael Bordallo Pinheiro. The 1200 works, including animals and other natural elements that decorate the branches, fountains and walls of Pimenta Palace, where Museu da Cidade is housed, were created at the Caldas da Rainha Factory and displayed by Portuguese fine artist Joana Vasconcelos. This renovation project by Lisboa City Council has a twofold purpose: the promotion of the Museu da Cidade, now more attractive than ever for visitors, and the work of Rafael Bordallo Pinheiro, awaiting discovery by the general public at this leisure and exhibit garden.

Information on Museu da Cidade:
The compelling Museu da Cidade tells the story of Lisbon's long history through prehistoric, Roman, Visigothic, Moorish, and medieval remains. It is located in the 18th century Pimenta Palace, built as a gift for King João V's mistress. Highlights include an enormous model of pre-earthquake Lisbon, maps and prints from before and after the quake, and tile panels of city scenes. Engravings of the Inquisition and of Catherine of Braganca departing from Lisbon to marry England’s Charles II may also be a center of attraction. There is also a lovely courtyard with peacocks wandering around.

Transportation.
Use your ticket for more information.
It will take you 30 minutes to get there by metro. Exit the station Campo Grande in direction opposite to the Stadium. Cross the street (under the freeway) walk 300 m and find the Museu da Cidade just on your right side.
Conference Banquet: 12 September, 19h00-23h00

The Conference Banquet will be held on 12 September at Casa do Alentejo

Rua das Portas de Santo Antão, 58
located in the city centre about 30m from the metro station “Restauradores”.

Transportation.

Use your ticket for more information.

By Metro (about 30 min from IST):

Exit at Restauradores Metro Station (blue line), Follow the exit "Praça dos Restauradores/Praça D. Pedro IV (Rossio)" and then "Praça dos Restauradores/Rua Jardim de Regedor". Follow the street for less than 100m and find the Restaurant just in front of you.
Scientific Programme

The Programme consists of 6 Plenary lectures (50/10min), around 156 regular presentations (15/5min) and more than 20 poster presentations. Presentations are grouped in Session Blocks according to 13 Mini-Symposia and 13 General Conference Topics. There will be almost 200 presentations in all from presenters of almost 40 countries.

List of Mini-Symposia
- **BD**: Bridge Dynamics
  Izabela J. Drygała
- **DS**: Dynamic Stability, Deterministic, Chaotic and Random Post-Critical States
  Jiří Náprstek
- **EH**: Energy Harvesting from Ambient Mechanical Oscillations
  Grzegorz Litak, Daniil Yurchenko
- **FV**: Lessons in Floor Vibrations: New Design and Retrofit
  Erin Kelly, Melissa W.Y. Wong, Elisabeth Malsch, Marguerite Pinto
- **ML**: Vibration of Solids and Structures under Moving Loads
  Piotr Kozioł, Zuzana Dimitrovová
- **NC**: Nonlinear Dynamics and Control of Engineering Systems
  Marian Wiercigroch, Marcin Kapitaniak, Vahid Vaziri
- **ND**: Nonlinear Dynamics, Chaos and Control of Elastic Structures
  José M. Balthazar, Paulo B. Gonçalves, Pedro L. Ribeiro
- **RM**: Sustainable Railway Maintenance
  Simona Fontul, Madalena Barroso, Paula Couto
- **RV**: Road and Railway Noise and Vibrations: Numerical Modeling and Mitigation
  Paulo A. Mendes, Luís Godinho, Pedro A. Costa
- **SM**: Structural Modifications: Modelling Predictions and Experimental Assessment
  Tiago Silva, Marta Carvalho, António Urgueira, Cristinel Mares
- **VE**: Simulation and/or Virtual Experiments for Vehicle Vibro-Acoustic Response
  Miguel Matos Neves
- **VM**: Vibration Evaluation, Control and Mitigation on Civil Engineering Structures
  Maria J.F. Silva, Hugo Rodrigues
- **VS**: Vibration Problems in Strongly Nonlinear Mechanical Dissipative Systems
  Alexey A. Kireenko, Sergey I. Zhavoronok

List of General Conference Topics
- **TP1**: Non-linear vibrations
- **TP2**: Fluid structure interaction
- **TP3**: Vibration in energy and power systems
- **TP4**: Machinery and structural dynamics
- **TP5**: Rotor dynamics
- **TP6**: Condition monitoring, tip-timing, experimental techniques
- **TP7**: Composites and nano-structures
- **TP8**: Microturbines
- **TP9**: Vehicle dynamics
- **TP10**: Vibration and waves
- **TP11**: MEMS, smart structures and systems
- **TP12**: Structural health monitoring
- **TP13**: Wave propagation
Invited Lectures
This world is full of vibrations
J.S. Rao (will be delivered by Romuald Rzadkowski*)

Active vibration suppression: Nonlinearity and aeroelastic problems
John E Mottershead*

Complex dynamics of drill-string: Theory and experiments
Marian Wiercigroch*, K. Nandakumar, M. Kapitaniak and V. Vaziri

Projection methods for stochastic structural dynamics
Sondipon Adhikari*, S.E. Pryse and A. Kundu

Vibration based diagnostics and prognostics of defects in rotating machinery
C. Nataraj*

Vibration: An excellent plant maintenance tool
Jyoti K. Sinha*

Presenting author is designated by *mark, all authors of invited, regular and poster presentations are included in Authors’ Index.

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162: ND, GA Wed. 11:20-11:40
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132: BD, VA2 Tues. 14:50-15:10
Jin, Guanghu
35: poster
44: poster
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143: ML, VA2 Mon. 17:20-17:40
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246: NC, GA Thur. 16:40-17:00
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- Wrobel, Jakub
  137: TP4, 2.2 Wed. 10:20-10:40
- Xu, Jianhua
  262: SM, VA1 Wed. 16:00-16:20
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Programme Specific Overview

For better clarity, several colour codes are used, for Mini-Symposia (see also the list in page 12)

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For organization purposes TP1 was added to NC, TP6 to ND, TP9 to RV, TP10 and TP13 to DS.
## Detailed Programme

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| **Mon. 14:30-15:30** |      | This World is Full of Vibrations  
J.S. Rao (delivered by Romuald Rzadkowski*) |
| **Mon. 14:30-15:30** |      | Coffee break |
| **Mon. 15:30-16:00** |      | |
| **Mon. 16:00-16:20** | ND 197 | Nonlinear behavior of hydrodynamic bearings supporting rotors with a rigid coupling misalignment  
Airton Nabarrete* and Vinicius Yoshida de Melo |
| **Mon. 16:20-16:40** | ND 13 | Condition monitoring of single mechanical seals  
George Zusman* |
| **Mon. 16:40-17:00** | ND 58 | On the dynamic buckling of very slender structures due to self-weight  
Reyolando Brasil*, Leandro Orbolato and Eduardo Pádua |
| **Mon. 17:00-17:20** | ND 67 | Tip-timing analysis of last stage steam turbine mistuned bladed disc during rundown  
Romuald Rzadkowski*, Leszek Kubitz, Michal Maziarz, Pawel Troka, Leszek Pietchowski and Ryszard Szczepanik |
| **Mon. 17:20-17:40** | ND 87 | Experimental evaluation of a vibro-impact model for two adjacent shear-building structures  
Marcus Varanis, Arthur Mereles, Anderson Langone Silva, José M. Balthazar, Angelo Tuşset and Clivaldo Oliveira* |
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<td><strong>Experimental evaluation of Tusi couple based energy harvester for scavenging power from human motion</strong></td>
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<td>Jan Smilek* and Zdenek Hadas</td>
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<td>Mon. 17:20-17:40</td>
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Nalinaksh S. Vyas* |
| Mon. 16:20-16:40 | TP11 280 | Experimental results for active control of multimodal vibrations by optimally placed piezoelectric actuators  
Andrea Rossi*, Fabio Botta, Roberto Maiozzi, Andrea Scorza and Salvatore Andrea Sciuto |
| Mon. 16:40-17:00 | TP2 19  | Analysis of classical flutter in steam turbine blades using reduced order aeroelastic model  
Chandra Shekhar Prasad* and Luděk Pešek |
| Mon. 17:00-17:20 | TP3 45  | Stability theory methods in mechanics problems  
Lyudmila K. Kuzmina* |
| Mon. 17:20-17:40 | TP11 62 | Exploiting lattice softening of Ni2MnGa austenite film in design of contactless high frequency micro-/nanocantilever resonators  
Ivo Stachiv* |
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| Tues. 10:00-10:20 | NC  | Coffee break                                                      |
| Tues. 10:20-10:40 | NC 59| Chairperson(s): Marian Wiercigroch, Vahid Vaziri                 |
| Tues. 10:40-11:00 | NC 60| TM-AFM nonlinear motion control including fractional-order
Angelo M. Tusset*, Frederic C. Janzen, Rodrigo T. Rocha and Jose M. Balthazar |
| Tues. 11:00-11:20 | NC 6 | Geometrically nonlinear free and forced vibrations of Euler-Bernoulli multi-span beams
Hatim Fakhreddine*, Ahmed Adri, Said Rifai and Rhali Benamar |
| Tues. 11:20-11:40 | NC 52| Simulation of structural dynamics with integrated feed drive control to improve stability of metal cutting processes in industrial machinery
Gerhard Kehl* |
| Tues. 11:40-12:00 | NC 73| Geometrically nonlinear free and forced vibrations analysis of clamped-clamped functionally graded beams with multi-cracks.
Mohcine Chajdi*, Ahmed Adri, Khalid El Bikri and Rhali Benamar |
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<td>Nonlinear free and forced vibration of Euler-Bernoulli beams resting on</td>
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<td>intermediate flexible supports</td>
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<td>Hatim Fakhreddine*, Ahmed Adri, Said Rifai and Rhali Benamar</td>
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<td>Tues. 14:30-14:50</td>
<td>EH</td>
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<td>Tues. 14:50-15:10</td>
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<td>Tues. 15:10-15:30</td>
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<tr>
<td>Tues. 14:30-14:50</td>
<td>BD</td>
<td>Izabela Drygala</td>
<td>Dynamic assessment of a cable-stayed footbridge under mainshock-aftershock seismic events with a concrete damage plasticity model Drygala Izabela* and Dulińska Joanna</td>
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<td>Tues. 14:50-15:10</td>
<td>BD</td>
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<td>Seismic performance of a masonry arch viaduct subjected to foreshocks and a mainshock Drygala Izabela, Joanna Dulińska, Łukasz Bednarz* and Jerzy Jasieńko</td>
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<td>Tues. 15:10-15:30</td>
<td>BD</td>
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<td>Dynamic forces with random amplitudes from rhythmic jumps and squats Marek Pantak*</td>
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<td>Tues. 14:30-14:50</td>
<td>TP5</td>
<td>Richard E. Markert</td>
<td>Parametric resonances of floating wind turbine blades under vertical wave excitation Takashi Ikeda*, Yuji Harata, Yugo Miyazawa and Yukio Ishida</td>
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<td>Tues. 14:50-15:10</td>
<td>TP5</td>
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<td>Fault diagnosis in epicyclic gearbox of wind turbine drive train A. Seshadri Sekhar* and P Srikanth</td>
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<td>Tues. 15:10-15:30</td>
<td>TP5</td>
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<td>FE-BE computation of electromagnetic noise of a permanent-magnetic excited synchronous machine considering dynamic rotor eccentricity Marcel Clappier and Lothar Gaul*</td>
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Tues. 15:30-16:00 coffee break
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<td>Marian Wiercigroch,</td>
<td>Helical buckling of thin rods: FE modelling</td>
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<td>Vahid Vaziri</td>
<td>Marcin Kapitaniak*, Vahid Vaziri and Marian Wiercigroch</td>
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<td>Experimental study of a passive inverted pendulum control system</td>
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<td>Diogo Vieira Resende, Marcus V. G. de Morais and Suzana M. Avila*</td>
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<td>Vortex induced vibrations of horizontal pipe in uniform flow</td>
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<td>Victoria Kurushina, Ekaterina Pavlovskaia* and Marian Wiercigroch</td>
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<td>Stability of the dynamic shifting process in the vehicle transmission with the input shaper</td>
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<td>Alexander Taratorkin*, Victor Derzhanskii and Igor Taratorkin</td>
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<td>Non-linear vibrations of gas suspension in tubes with partial filling</td>
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<td>Damir Gubaidullin*, Rinat Zaripov and Liudmila Tkachenko</td>
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<td>Tues. 16:00-16:20</td>
<td>EH</td>
<td>Grzegorz Litak</td>
<td>Vibrational tests of a system with two coupled beams and a distributed tip mass</td>
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<td>Andrzej Rysak*, Euan C. Rodgers and Grzegorz Litak</td>
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<td>Tues. 16:20-16:40</td>
<td>EH</td>
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<td>Verified nonlinear model of piezoelectric energy harvester</td>
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<td>Ondrej Rubes*, Martin Brabc and Zdenek Hadas</td>
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<td>Tues. 16:40-17:00</td>
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<td>Investigating the role of subcritical and supercritical bifurcations on the energy harvesting potential of a dynamic oscillator subjected to random excitations</td>
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<td>Ashwad Raaj Paramasivam, Pradeep Malaji and Venkatramani Jagadish*</td>
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<td>Acoustic energy harvesting using piezoelectric device from random ambient noise</td>
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<td>Dharanee Dharan Mani*, Ramesh Gupta Burela and Venkatramani Jagadish</td>
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<td>EH</td>
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<td>A Bayesian updating procedure for the electromechanical properties of piezoelectric energy harvesters</td>
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<td>Patricio Peralta*, Rafael Ruiz and Viviana Meruane</td>
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<td>Tues. 16:00-16:20</td>
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<td>Simona Fontul, Paula Couto</td>
<td>Assessment of human-induced vibrations of a cable-stayed footbridge</td>
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<td>Izabela Drygała, Joanna M. Dulińska and Marek Wazowski*</td>
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<td>Tues. 16:20-16:40</td>
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<td>Luis Kanje, Paula Couto*, Simona Fontul and Maria João Falcão Silva</td>
<td>Application of ProNIC methodology in railway infrastructures construction</td>
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<td>Vânia Marecos*, Simona Fontul, Mercedes Solla and Maria De Lurdes Antunes</td>
<td>BIM application to railway monitoring and rehabilitation</td>
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<td>Vânia Marecos*, Simona Fontul, Mercedes Solla and Maria De Lurdes Antunes</td>
<td>Transport infrastructures assessment using multiple GPR configurations and FWD</td>
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<td>Ana Margarida Marques, Simona Fontul* and André Paixão</td>
<td>Ballast fouling evaluation with ground penetrating radar</td>
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<tr>
<td>Tues. 16:00-16:20</td>
<td>TP2</td>
<td>Santosh Dwivedy</td>
<td>Hydrodynamic aspects of moving vehicle with sloshing tanks</td>
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<td>Mengmeng Han*, Jian Dai and Kok Keng Ang</td>
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<td>Tues. 16:20-16:40</td>
<td>TP2</td>
<td>Santosh Dwivedy</td>
<td>Ellipsoid movement in ideal or viscous fluid</td>
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<td>Alexander Petrov and Mariana Lopushanski*</td>
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<td>Tues. 16:40-17:00</td>
<td>TP3</td>
<td>Santosh Dwivedy</td>
<td>Vibration characteristics of a thrust plate supported on active magnetic bearing</td>
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<td>Balaji Sankar, A. Seshadri Sekhar*, Shah Brijeshkumar and Jana Soumendu</td>
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<td>Tues. 17:00-17:20</td>
<td>TP3</td>
<td>Santosh Dwivedy</td>
<td>Prediction of flow induced vibrations in vertical turbine pumps using one-way fluid-structure interaction</td>
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<td>Ravindra Birajdar* and Appasaheb Keste</td>
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<td>Tues. 17:20-17:40</td>
<td>TP3</td>
<td>Santosh Dwivedy</td>
<td>Experimental study in reduction of two phase-flow induced vibration</td>
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<td>Ismail Hossain*, Vladimir I. Velkin and Sergei E. Shcheklein</td>
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### Wednesday, 12\textsuperscript{th} of September

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<tr>
<td>Wed. 9:00-10:00</td>
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<td><strong>Plenary Lecture 3</strong></td>
<td>Nuno Maia</td>
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<tr>
<td>Wed. 9:00-10:00</td>
<td>GA</td>
<td><strong>Projection Methods for Stochastic Structural Dynamics</strong></td>
<td><em><em>Sondipon Adhikari</em>, S.E. Pryse, A. Kundu</em>*</td>
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<td>Wed. 10:00-10:20</td>
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<td><strong>coffee break</strong></td>
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<tr>
<td>Wed. 10:20-11:00</td>
<td>ND</td>
<td><strong>Smart vibration sensors for machinery condition monitoring and protection</strong></td>
<td><strong>George Zusman</strong>*</td>
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<tr>
<td>Wed. 10:40-11:00</td>
<td>ND</td>
<td><strong>Modal analysis of time-periodic elastic structures through finite element analysis</strong></td>
<td><strong>Barend Bentvelsen</strong>* and <strong>Arnaud Lazarus</strong></td>
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<tr>
<td>Wed. 11:00-11:20</td>
<td>ND</td>
<td><strong>Visualization research on the influence of an ultrasonic degassing system on the operation of a hydraulic gear pump</strong></td>
<td><strong>Piotr Antoniak</strong>*, <strong>Jarosław Stryczek</strong>, <strong>Michał Banaś</strong>, <strong>Oleksandr Luhovskyi</strong>, <strong>Ihor Gryshko</strong>, <strong>Andrii Zilinskyi</strong> and <strong>Vasyl Kovalov</strong></td>
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<td>Wed. 11:20-11:40</td>
<td>ND</td>
<td><strong>Vibration of a crane system model equipped with flexible links in the presence of kinematic task-based constraints</strong></td>
<td><strong>Elżbieta Jarzębowska</strong>*, <strong>Andrzej Urbaś</strong> and <strong>Krzysztof Augustyniek</strong></td>
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<td>Wed. 11:40-12:00</td>
<td>ND</td>
<td><strong>Fault detection based on instantaneous angular speed measurement and variational mode decomposition</strong></td>
<td><strong>Sanjin Braut</strong>*, <strong>Roberto Žigulić</strong>, <strong>Ante Skoblar</strong> and <strong>Goranka Štimac Rončević</strong></td>
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<td>Wed. 10:20-10:40</td>
<td>SM</td>
<td>Coupling of structures using frequency response functions</td>
<td>Tiago Silva* and João Pereira</td>
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<tr>
<td>Wed. 10:40-11:00</td>
<td>SM</td>
<td>Mass-geometric parameters improvement of gearbox by using vibration analysis</td>
<td>Viktorii Batizi* and Dmitriy Likhachev</td>
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<td>Wed. 11:00-11:20</td>
<td>SM</td>
<td>An Identification of the unbalanced magnetic pull in generator at excitation and the hydropower machine model validation</td>
<td>Zeljan Lozina*, Damir Sedlar and Ivan Tomac</td>
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<td>Wed. 11:20-11:40</td>
<td>SM</td>
<td>On reducing uncertainty on the elliptical plane modal identification method</td>
<td>Diogo Montalvao*, Mihai Dupac, Daerefa-A Amafabia, Opukuro David-West and George Haritos</td>
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<td>Wed. 11:40-12:00</td>
<td>SM</td>
<td>Investigation of environmental effects on updated finite element model of a solar power plant</td>
<td>Pouyan Alimouri* and Hamid Reza Talebi Amanieh</td>
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<td>Wed. 10:20-10:40</td>
<td>RV</td>
<td>Numerical analysis of the shielding effect provided by periodic elastic scatterers</td>
<td>Paulo Amado-Mendes*, Luis Godinho, Carlos Albino, Pedro Alves-Costa and Alexandre Castanheira-Pinto</td>
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<td>Wed. 10:40-11:00</td>
<td>RV</td>
<td>Vehicle response on kinematic excitation</td>
<td>Veronika Vašková* and Jozef Melcer</td>
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<td>Wed. 11:00-11:20</td>
<td>RV</td>
<td>The vibration induced by the passage of trains at various speeds and their effect on the structural response of buildings – experimental and numerical analysis</td>
<td>Barbara Kożuch*, Filip Pachla and Tadeusz Tatara</td>
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<td>Wed. 11:20-11:40</td>
<td>RV</td>
<td>Parameter identification and design of a frequency, amplitude and preload dependent hydro- and rubbermount bushing model for transient multibody simulations</td>
<td>Urs Becker*, Jin-Fan Liu and Mark Krüger</td>
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<td>Wed. 11:40-12:00</td>
<td>RV</td>
<td>Effect of adding mass to rotor on in-plane squeal in automotive disc brake</td>
<td>Takashi Nakae*, Takahiro Ryu, Hiroki Goto and Daisuke Sato</td>
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<td>Wed. 10:20-10:40</td>
<td>TP4  137</td>
<td>Use of mechanical resonance in impact machines</td>
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<td>Wieslaw Fiebig and Jakub Wrobel*</td>
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<td>Wed. 10:40-11:00</td>
<td>TP4  106</td>
<td>Prediction of position-dependent stability lobes based on reduced virtual model</td>
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<td>Filip Ksica and Zdenek Hadas</td>
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<td>Simulation of plastic deformation and destruction in the process of chip formation</td>
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<td>Tanel Tärgla, Jüri Olt and Olga Liivapuu</td>
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<td>TP4  225</td>
<td>Noise source identification of tractor and sound insulation of engine hood</td>
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<td>Shunming Li, Ganyuan Pan and Xianglian Li</td>
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<td>TP4  238</td>
<td>Oscillations of a statically indeterminate system with a finite number of freedom degrees (the experience of applying mathematical packages in the technical university course of mechanics)</td>
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<td>Alexander Kuznechikov, Dmitry Levitskiy and Sergei Zotov</td>
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<td>Wed. 12:00-13:30</td>
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<td>Vibration Based Diagnostics and Prognostics of Defects in Rotating Machinery</td>
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<td>Poster session</td>
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<td>Remarks on an energy harvester model with fractional order damping</td>
<td>Clivaldo Oliveira*, Rodrigo Rocha, Angelo Tusset, Jose Manoel Balthazar,</td>
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<td>Arthur Mereles, Marcus Varanis, Anderson Silva and Sergio David</td>
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<td>Diesel engine vibration monitoring based on a statistical model</td>
<td>Suzana Lampreia*, José Requeijo and Vitor Lobo</td>
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<td>Recurrence analysis of fractional-order Lorenz system</td>
<td>Andrzej Rysak and Magdalena Gregorczyk*</td>
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<td>Integration of maintenance systems</td>
<td>Suhas Sarje*</td>
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<td>Prediction of cutting tool vibration and surface roughness in hard</td>
<td>Nitin Ambhore*, Dinesh Kamble and Satish Chinchanik</td>
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<td>turning of AISI52100 steel</td>
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<td>Research on thermal-mechanical coupling deformation of the ball screw</td>
<td>Wenhua Ye*, Jianhua Xu and Ruijun Liang</td>
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<td>Vibration analysis based on the spectrum kurtosis for adjustment and</td>
<td>Anthimos Georgiadis*, Xiaoyun Gong and Nicolas Meier</td>
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<td>monitoring of ball bearing radial clearance</td>
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<td>Optimization of parameters of a modal active control in a beam of</td>
<td>Camila Albertin Xavier Da Silva, Erik Taketa, Edson Hideki Koroishi*, Fabian</td>
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<td>Experimental and computational dynamic analysis of the foam concrete as a sub-base layer of the pavement structure</td>
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<td>Jozef Vlcek, Veronika Valaskova* and Marian Drusa</td>
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<td>Fundamental study on countermeasures against subharmonic vibration of order 1/2 in automatic transmissions for cars</td>
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<td>Piotr Koziol*, Dariusz Kudla and Cristinel Mares</td>
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<td>On the propagation of Rayleigh-type waves in an initially stressed heterogeneous transversely isotropic layer resting on yielding foundation.</td>
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<td>Amit Kumar Verma*, Amares Chattopadhyay and Abhishek Kumar Singh</td>
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<td>Data fusion of acceleration and velocity features (dFAVF) approach for fault diagnosis in rotating machines</td>
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<td>Kenisuomo C Luwei*, Jyoti K Sinha, Akilu Yunusa-Kaltungo and Keri Elbhbah</td>
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<td>Dipanand D. Birajdar and Piyush Shakya*</td>
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<td>The vibration and noise reduction design and optimization for timing gear chamber cover of a 4-cylinder diesel engine</td>
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### Thursday, 13th of September

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<td>Comparative analysis of strategies for a semi-active suspension of a ¼ vehicle</td>
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<td>Matheus Alves Melo and Suzana Avila*</td>
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<td>10:40-11:00</td>
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<td>Identifying route to stall flutter through stochastic bifurcation analysis</td>
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<td>Investigating the route to flutter in a pitch-plunge airfoil with freeplay</td>
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<td>nonlinearity subjected to input flow fluctuations</td>
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<td>11:20-11:40</td>
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<td>Design and identification of tilt-motor quadrotor control system</td>
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<td>Mikhail Shavin*</td>
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<td>The estimative criterion of the resonant acoustic break-up of a gas bubble in liquid</td>
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<td>Calculation of acoustic flow-rate measurements error with the help of Fermat's principle</td>
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<td>DS</td>
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<td>A new simple method for determining the sound absorption coefficient</td>
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<td>Merab Chelidze*</td>
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<td>Semyon Shkundin* and Valentina Rumyantseva</td>
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<td>The acoustic waves propagation in a cylindrical wave-guide with the laminar flow</td>
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<td>Study of finite amplitude capillary waves stability</td>
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| Thur. 10:20-10:40 | VM 20 | Maria João Falcão | Damage estimation on concrete gravity dams through artificial accelerograms  
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| Thur. 10:40-11:00 | VM 145 |              | Limitations of a dynamic shear-frame model based in a small-scale  
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Augusto de Souza Pippi*, Pedro L. Bernardes Júnior, Suzana M. Avila, Marcus  
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| Thur. 11:00-11:20 | VM 183 |              | A parametric study of a tower controlled by a pendulum tuned mass damper:  
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Gino Colherinhas, Maura Shzu*, Suzana Ávila and Marcus Morais |
| Thur. 11:20-11:40 | VM 230 |              | Identification of vibration properties of a mid-rise wooden building using  
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Yuji Miyazu* and Takuro Mori |
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Mahdi Abdeddaim*, Arnav Anuj Kasar and Nassim Djedoui |
<p>| Thur. 12:00-13:30 |      | Lunch         |                                                                      |</p>
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| Thur. 13:30-13:50 | ND 251 | José M. Balthazar, Pedro L. Ribeiro | Models for free non-linear vibrations of non-local plates with immovable  
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Pedro Ribeiro* and Tomás R. C. Chuaqui |
| Thur. 13:50-14:10 | ND 239 |              | In-plane vibration of rotating rings using a high order theory  
Tao Lu*, Apostolos Tsouvalas and Andrei Metrikine |
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Honggi Rho*, Jaesung Bae, Jaihyuk Hwang and Jinho Rho |
| Thur. 14:30-14:50 | ND 152 |              | Vibration analysis under varying operating conditions for rotorcraft gearbox  
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| Thur. 14:50-15:10 | ND 191 |              | Effect of noise on support vector machine based fault diagnosis of IM using  
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Purushottam Gangsar* and Rajiv Tiwari |
| Thur. 15:10-15:30 | ND 236 |              | Study on experimental verification of non-linearity of hinge stiffness simulator  
Bong-Do Pyeon*, Jong-Hyuk Kim, Jaesung Bae, Jinho Rho and Jung-Sun  
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<td>Dynamic stability analysis of Girder suspension systems with a comparison</td>
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<td>friction forces in the contact spot on the background of the coupled model</td>
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<td>Nonlinear damped vibrations of planar discrete systems – numerical and experimental modelling. Peter Pavlov*</td>
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<td>Dynamic analysis of a parametrically excited golden Muga silk embedded pneumatic artificial muscle. Bhaben Kalita and Santosha K Dwivedy*</td>
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<td>Vahid Vaziri, Marcin Kapitaniak</td>
<td>Control of stick-slip in drill-strings. Marian Wiercigroch</td>
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<td>Jiří Náprstek</td>
<td>Non-destructive testing based on vibrations in the low to mid-frequency range. Philip Becht*, Elke Deckers, Claus Claeys, Bert Pluymers and Wim Desmet</td>
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<td>Gabriele Marrongelli*</td>
<td>An artificial intelligence strategy to detect damage from response measurements: application on an ancient tower. Gabriele Marrongelli*, Rafaelle Piazzaroli Finotti, Carmelo Gentile and Flávio Barbosa</td>
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<td>Cristobal Garcia*</td>
<td>A self-powered triboelectric velocity sensor for impact detection in composite structures. Cristobal Garcia* and Irina Trendafilova</td>
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<td>Piotr Koziol</td>
<td>On the sloshing effect in half-filled freight trains during braking. Jian Dai*, Mengmeng Han, Kok Keng Ang and Minh Thi Tran</td>
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<td>Martin Vlkovsky, Piotr Koziol and Dariusz Grzesica*</td>
<td>Wavelet based analysis of truck vibrations during off-road transportation. Martin Vlkovsky, Piotr Koziol and Dariusz Grzesica*</td>
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<td>Yingjie Wang*, Zuzana Dimitrovová and Jong-Dar Yau</td>
<td>Dynamic response of a vehicle with flexible car body moving on a ballasted track. Yingjie Wang*, Zuzana Dimitrovová and Jong-Dar Yau</td>
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