

RASD2019

Recent Advances in Structural Dynamics
PROGRAMME

15-17 April 2019
Lyon, France

RASD2019

13th International Conference on Recent Advances in Structural Dynamics
15-17 April 2019, Lyon

Welcome to Lyon and to RASD2019

On behalf of the Organising Committee, it is a pleasure to welcome you to Lyon for the XIIIth International Conference on Recent Advances in Structural Dynamics (RASD2019). Lyon is a beautiful city with universities renowned in the field of acoustics and structural dynamics, so we really hope that bringing RASD2019 to Lyon will be stimulating and that all of you will have an enjoyable conference!

The conference is devoted to theoretical, numerical and experimental developments in structural dynamics and their application to all types of structures and dynamical systems. The conference will reflect the state-of-the-art structural dynamics and dynamical systems in science and engineering practice and is an opportunity to exchange scientific, technical and experimental ideas. The Conference Proceedings include 101 papers by authors from over 24 countries and are contained on a USB memory stick included in your conference pack. At the end of the conference, a special award will be assigned to the best presentation, so remember to vote!

The conference will be held at the conference centre *Valpré Lyon* (1 chemin de Chalin, 69130 Ecully, Lyon, France, en.valpre.com). Registration will take place from 08:00 on Monday 15 April in the main reception (RASD2019 registration desk, tel: +33 (0) 4 72 18 05 05).

The three lecture theatres being used are the Amphitheatre, Room 1 Valoise, and Room 2 Ecureuils. To locate the lecture theatres refer to the floor plan of the Valpré Lyon on the last page of this programme. Refreshments will be served on the ground floor in the morning and between the two technical sessions in the afternoon, with lunch being served in the same area.

Following the afternoon session on Monday, there will be a reception at the *Valpré Lyon*; this is for all delegates and accompanying persons. On Tuesday evening, there will be a conference dinner in Lyon city centre at the *Brasserie Georges* (30 Cours de Verdun Perrache, 69002 Lyon, France, www.brasseriegeorges.com). This is within walking distance from the Place Bellecour and we will gather there before walking all together to the restaurant.

I would like to thank the members of the Organising Committee and the Conference Secretariat for their considerable help. In particular I would like to thank the Laboratory of Vibration and Acoustics of INSA Lyon for hosting this conference.

I hope you will all have an interesting and exciting meeting, and a pleasant stay in Lyon.

Emiliano Rustighi, *Conference Chair*

Conference Outline

Monday 15 April 2019

08:00 – 12:00	Registration
08:45 – 09:00	Opening Ceremony
09:00 – 10:00	Plenary Session 1
10:00 – 10:30	Refreshments
10:30 – 12:30	Technical Sessions
12:30 – 13:40	Lunch
13:40 – 14:40	Plenary Session 2
14:50 – 16:10	Technical Sessions
16:10 – 16:40	Refreshments
16:40 – 18:00	Technical Sessions
18:30 – 20:00	Conference Reception, <i>Valpré</i>

Tuesday 16 April 2019

09:00 – 10:00	Plenary Session 3
10:00 – 10:30	Refreshments
10:30 – 12:30	Technical Sessions
12:30 – 13:40	Lunch
13:40 – 14:40	Plenary Session 4
14:50 – 16:10	Technical Sessions
16:10 – 16:40	Refreshments
16:40 – 18:00	Technical Sessions
19:30	Conference Dinner, <i>Brasserie Georges</i>

Wednesday 17 April 2019

09:00 – 10:00	Plenary Session 5
10:00 – 10:30	Refreshments
10:30 – 12:30	Technical Sessions
12:30 – 12:45	Closure Session and Best Presentation Award
12:45	Lunch
15:00	Tour of the Laboratory of Vibration and Acoustics, and the Contact and Structure Mechanics Laboratory, <i>INSA Lyon</i> (optional)

MONDAY 15 APRIL 2019

08:45	Opening Ceremony Amphitheatre	Professor Nicolas Rivi�re , <i>Deputy Director of Research: Environment, INSA, France</i> Dr Neil Ferguson , <i>Institute of Sound and Vibration Research, University of Southampton, UK</i>	
09:00	Plenary Session 1 Amphitheatre Chair: Q. Lecl�re	Professor Li Cheng , “Structural Wave Manipulation through Acoustic Black Holes”, <i>Hong Kong Polytechnic University, Hong Kong</i>	
10:00	Refreshments		
	AMPHITHEATRE	ROOM 1 VALOISE	ROOM 2 ECUREUILS
	Active Vibration Control and Smart Structures I Chairs: P. Gardonio	Vibroacoustics Chairs: V. Sorokin and E. Manconi	System Identification and Inverse Problems Chairs: R. Fuentes and M. Aucejo
10:30		V. Sorokin (122) On elastic wave propagation in quasi-periodic structures	R. Fuentes (40) Efficient parameter identification and model selection in dynamical systems via sparse Bayesian learning
10:50		G. Duval (29) Modelling the vibrational field of a single-layered ground containing a buried object	T.J. Rogers (65) Identification of a Duffing Oscillator Using Particle Gibbs with Ancestor Sampling
11:10	E. Turco (78) Experimental implementation of a shunted electro-magnetic Tuneable Vibration Absorber	E. Manconi (228) Wave transmission from asymmetrical changes of cross-sectional area in a beam	P. Gardner (159) Learning of model discrepancy for structural dynamics applications using Bayesian history matching
11:30	N. Battistella (172) Semi-active dampers for vibration control of professional washing machines	X. Niu (149) An analytical model of transducer array arrangement for guided wave excitation and propagation on cylindrical structures	A. Casaburo (276) Application of pattern recognition and machine learning methods to identify vibrating systems in similitude
11:50	S. Ches� (279) Hybrid Mass Damper: application to an helicopter	Y. Yang (277) Prediction of sound transmission through periodic structures using a wave and finite element method	M. Aucejo (218) On the interest of a space-time regularization for reconstructing sparse excitation sources
12:10	D. Martins (99) On the dynamics of a smart tensegrity structure using shape memory alloy	L. Ledet (193) The method of using bi-orthogonality to find closed form solutions to eigenvalue problems for arbitrarily complicated symmetric waveguides	F. Iezzi (112) Effects of modal incompleteness on quantification of mode shapes complexity in vibrating structures
12:30	Lunch		
13:40	Plenary Session 2 Amphitheatre Chair: N. Totaro	Dr Alain Berry , “Time-space identification of dynamic transverse loads on plane elastic structures”, <i>Universit� de Sherbrooke, Canada</i>	
	AMPHITHEATRE	ROOM 1 VALOISE	ROOM 2 ECUREUILS
	Active Vibration Control and Smart Structures II Chair: S. Ches�	Structural Acoustics and Noise Control Chair: S. Bolton	Structural Model Validation I Chair: K. Sweitzer
14:50	Y. Jiang (303) An experimental study on an energy harvesting shock absorber with mechanical motion rectification	D. Zhao (221) The acoustic response of stiffened plates	M. Shadlou (152) Current trends on computational modelling of masonry infilled reinforced concrete frames
15:10	P. Gardonio (101) Piezoelectric patches with multi-resonant shunts for broadband vibration control: practical tuning approach	X. Xie (222) An adaptive MOR method for vibro-acoustic analysis of dynamic systems with viscoelastic damping	L. Solazzi (85) Overhead crane subjected to impulse loading
15:30	E. Rustighi (185) Prediction of the acoustic emissions of a rigid electrodes DEAP loudspeaker	Y. Xue (55) Structural Damping by Layers of Fibrous Media Applied to a Periodically-Constrained Vibrating Panel	L. Solazzi (86) Structural dynamics of big gantry crane subjected to different trolley move laws
15:50	U. Musella (156) Development of a feedback control solution for Multi-Input Multi-Output swept sine testing in a Virtual Shaker environment		S. Miyano (74) Effect of contact area with fixture on dynamic behavior of joint interface in ultrasonic welding of thermoplastics
16:10	Refreshments		

MONDAY 15 APRIL 2019

	AMPHITHEATRE	ROOM 1 VALOISE	ROOM 2 ECUREUILS
	Rotor Dynamics and Control Chair: P. Forte	Energy Harvesting Chair: L.D. Bo and Y.C. Kim	Structural Model Validation II Chair: L. Solazzi
16:40	M. Barsanti (63) Random error propagation and uncertainty analysis in the dynamic characterization of tilting pad journal bearings	L.D. Bo (104) Scaling laws of electromagnetic and piezoelectric seismic vibration energy harvesters	M.E. Absawy (39) Dynamic Behavior of Variable Cross- Section Offshore Wind Turbine with Flexible Foundation Using Finite Element Method
17:00	G. Tuzzi (232) Investigation on coupling between disc "Umbrella mode" and shaft bending modes in a rotating shaft-disc assembly	M. Perez (284) Optimization of a two degree-of-freedom vibration energy harvester for a dual- frequency excitation	M.E. Absawy (37) Semi Analytical Model for the Dynamic Behavior of Offshore Wind Turbine with Flexible Foundation
17:20	F. Dohnal (257) Tuning of Parametric Excitation for Rotor Balancing	K. Bendine (26) Numerical modelling of piezoelectric based energy harvesting from bridge structure using ANSYS	D. Chawda (130) Dynamic amplification factor and Response the spectrum of Cantilever Beam under Successive Moving Loads
17:40	Z. Saeed (192) Substructuring for Contact Parameters Identification in Bladed-disks	Y.C. Kim (305) Design and performance test of an electromagnetic energy harvester to supply sustainable power for smart tyre monitoring system	
19:00	Reception, Valpré Lyon		

TUESDAY 16 APRIL 2019

09:00	Plenary Session 3 Amphitheatre Chair: E. Rustighi		Professor Gaetan Kerschen, “Dynamic vibration absorbers: revisiting classical results and introducing new tuning strategies”, <i>University of Liège, Belgium</i>	
10:00	Refreshments			
AMPHITHEATRE		ROOM 1 VALOISE		ROOM 2 ECUREUILS
Nonlinear Vibrations I Chairs: F. Dohnal and B. Zaghari		Numerical and Analytical Methods Chairs: A. Cicirello and G. Čepon		Experimental Techniques I Chairs: E. Mucchi and H.G. Kil
10:30		G. Čepon (254) Introduction of line contact in frequency-based substructuring process using measured rotational degrees of freedom		E. Mucchi (56) Experimental assessment of test tailoring methods for single-axis and multi-axis accelerated tests
10:50	H. Fakhreddine (144) Geometrically nonlinear forced vibrations of fully clamped multi-span beams carrying multiple masses and resting on a finite number of simple supports	V. Kumar (188) Free vibration of spring-mounted beams		D. Gorjup (68) Frequency Domain Multi-View High-Speed Camera Measurement of Operational Deflection Shapes
11:10	F. Taddei (211) Seismic Transient Simulation of an Operating Wind Turbine Considering the Soil-Structure Interaction	L. Ledet (194) Using the Finite Product Method for solving eigenvalue problems formulated in cylindrical coordinates		G. D’Elia (70) On the Cross Axis Responses in SISO and MIMO Vibration Control Testing
11:30	M. Chajdi (147) Geometrically nonlinear forced vibrations of fully clamped functionally graded beams with multi-cracks resting on intermediate simple supports	L. Bull (46) A Probabilistic Framework for Online Structural Health Monitoring		M. Kirchner (148) Joint state/input estimation with a Fourier dictionary for the input representation: effect of spectral leakage
11:50	B. Zaghari (120) Parametrically Excited Nonlinear Two-Degree-of-Freedom Electromechanical Systems	A. Cicirello (302) Sensitivity analysis of generalised eigenproblems and application to wave and finite element models		H.G. Kil (282) Measurements of in-plane vibration intensities in a beam and a plate
12:10	N.K. Sahu (60) Experimental analysis of dynamic stability characteristics of beams under parametric excitation	H. Li (296) A novel space-time method for structural dynamic analysis by differential cubature		E. Soave (57) Vibrational analysis and diagnostics by means of laser triangulation sensor
12:30	Lunch			
13:40	Plenary Session 4 Amphitheatre Chair: T. Waters		Professor Domingos A. Rade, “Dynamic modeling of advanced composite materials”, <i>Aeronautics Institute of Technology, Brazil</i>	
AMPHITHEATRE		ROOM 1 VALOISE		ROOM 2 ECUREUILS
Passive Vibration Control and Devices I Chair: T. Waters		Stochastic Dynamics and Uncertain Systems Chair: M. Boltežar		Nonlinear Vibrations II Chair: F. Taddei
14:50	A. Di Egidio (44) Visco-elastic coupling between a linear two-dof system and a rocking rigid block to improve the dynamic response	E. Capiiez-Lernout (87) Nonparametric probabilistic approach for uncertainty quantification of geometrically nonlinear mistuned bladed-disks.		L. Benchouaf (240) The influence of geometric imperfections on large-amplitude vibrations of thin simply supported plate by an asymptotic numerical method
15:10	H. Dogan (75) Investigation of Inerter-based Dynamic Vibration Absorber for Machining Chatter Suppression	E. Pesaresi (88) Analysis of synthesized non-Gaussian excitations for vibration-based fatigue life testing		M. de Castro Magalhaes (301) Non-linear dynamic vibration absorbers (NDVA) using targeted energy transfer (TET) – A review
15:30	Y. Li (103) Optimal design of inerter-integrated vibration absorbers for seismic retrofitting of a high-rise building in Colombia	A. Trapp (141) Characterizing non-Gaussian vibration loading using the trispectrum		S. Chen (298) An explicit-implicit method for nonlinear time-domain soil-structure interaction analysis
15:50	K. Billon (283) Shunted piezoelectrical suspension for vibration attenuation: Numerical simulations and experimental results	G.S. Sharma (280) Effect of geometric and material uncertainties on the acoustic performance of a voided rubber in water		
16:10	Refreshments			

TUESDAY 16 APRIL 2019

	AMPHITHEATRE	ROOM 1 VALOISE	ROOM 2 ECUREUILS
	Railway Dynamics Chairs: L. Auersch and B. Van Damme	Passive Vibration Control and Devices II Chair: A. Di Egidio	Experimental Techniques II Chair: D. Gorjup
16:40	L. Auersch (252) Vehicle-track-soil interaction and train-induced ground vibration – Theory and measurements in Germany, Switzerland and France	P. Deastra (28) Time domain analysis of structures with hysteretic vibration suppression systems	D. Tajiri (109) Identification of modal parameters in a lightly damped system based on impact vibration testing: Application of exponential window and removal of its effect
17:00	Y. Liu (299) Experimental research on temperature field of CRTS-II slab ballastless track structure in construction period	M. Basili (175) A hysteretic absorber to mitigate vibrations of rail noise barriers	X.N. Meng (274) Search on application of PVDF piezoelectric film for stress and vibration measurement
17:20	B. Van Damme (34) Railway Ballast Experimental Testing and Modelling for Structural Analysis	D.F. Ledezma-Ramirez (174) Shock response of a two stage isolation system	F. Vasquez (184) Off-road motorcycle tyre force estimation
17:40	L. Liang (127) The vibration and noise characteristics of steel box-girder bridge under three typical track structures		
18:00	N. Fu (289) Study of vibration energy characteristics of a ballastless track with anti-vibration structure by power flow analysis		
19:30	Conference Dinner, <i>Brasserie Georges</i>		

WEDNESDAY 17 APRIL 2019

09:00	Plenary Session 5 Amphitheatre Chair: N.S. Ferguson		Dr John Macdonald, “Human-structure interaction: modelling, experiments and full-scale measurements”, <i>University of Bristol, UK</i>	
10:00	Refreshments			
	AMPHITHEATRE		ROOM 1 VALOISE	ROOM 2 ECUREUILS
	Civil Engineering Structures Chairs: E.A. Tingatinga and E. Ahmadi		Metamaterials Chairs: A. Rallu and Q. Aumann	Multibody Dynamics and Modelling Chairs: T. Yoshida and H. Ibrahim
10:30	E. Ahmadi (52) Nonlinear Dynamics of Pre-tensioned Rocking Rigid Blocks	A. Rallu (58) Wave dispersion curves in discrete lattices derived through asymptotic multi-scale method	T. Yoshida (73) Vibration characteristics of an operating ball mill	
10:50	J.-D. Kang (196) Equivalent SDOF System for Estimating Inelastic Seismic Response of Buildings with Fluid Viscous Dampers	F. Mittermeier (72) Numerical investigation of the potential of tailored inclusions as noise reduction measures	O. Vinogradova (146) The dynamics of a cylinder on a vibrating plane with friction	
11:10	J. Van Hauwermeiren (293) The effect of the spatial distribution of crowds on the structural response to pedestrian excitation	Q. Aumann (76) Parametric model order reduction for acoustic metamaterials based on local thickness variations	J. Wu (54) Modelling of a train seat with subject exposed to lateral, vertical and roll vibration	
11:30	E. Ahmadi (53) On the Use of Entangled Wire Materials in Pre-tensioned Rocking Columns	M. Miksch (117) Numerical computation of the spatial decaying wave characteristics for the design of locally resonant acoustic metamaterials	H. Ibrahim (33) Static and Random Vibration Analyses of a University CubeSat Project	
11:50	E.A. Tingatinga (195) Blast Load Analysis and Simulation of Unreinforced Concrete Masonry Wall	G.S. Sharma (280) Effect of geometric and material uncertainties on the acoustic performance of a voided rubber in water		
12:10	T. Branci (135) Evaluation of the seismic resistance capacity of steel X-braced frames through their seismic behavior factor			
12:30	Closing Ceremony and Best Presentation Award			
12:45	Lunch			
15:00	Tour of Laboratory of Vibration and Acoustics, and the Contact and Structure Mechanics Laboratory, <i>INSA Lyon</i> (optional)			

Conference Centre Valpré Lyon

1 chemin de Chalin, 69130 Ecully, Lyon



