

TIME TABLE

TIME	Monday January 29	Tuesday January 30	Wednesday January 31	Thursday February 1
9.00 - 9.45		Elliott	Twiefel	Naets
9.45 - 10.30		Tehrani	Twiefel	Gryllias
11.00 - 11.45		Gardonio	Twiefel	Peeters
11.45 - 12.30		Gardonio	Twiefel	Gabilondo
14.30 - 15.15	Daley	Tehrani	Twiefel	
15.15 - 16.00	Daley	Saggini	Twiefel	
16.30 - 17.15	Elliott	Bein	Berkhof	
17.15 - 18.00	Daley	Mayer	Berkhof	
19.30	Course Dinner			



ADMISSION AND ACCOMMODATION

The registration fee is 340.00 Euro + VAT taxes*, where applicable (bank charges are not included).

The registration fee includes a complimentary bag, three fixed menu buffet lunches, coffee breaks, printed lecture notes, downloadable lecture notes and wi-fi internet access.

Applicants must apply by January 24, 2018.

Applications should be made on-line through our web site: <http://www.cism.it/courses/J1801/>.

A message of confirmation will be sent to accepted participants.

Information about travel and accommodation is available on our web site, or can be mailed upon request.

A limited number of rooms is available at our Guest House at the rate of Euro 30,00 per person/night.

Applicants may cancel their course registration and receive a full refund by notifying CISM Secretariat in writing (by email) no later than two weeks prior to the start of the course.

If cancellation occurs less than two weeks prior to the start of the course, a Euro 50,00 handling fee will be charged. Incorrect payments are subject to Euro 50,00 handling fee.

* Italian VAT is 22%.

For further information please contact:

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ACADEMIC YEAR
2018
Centre International des Sciences Mécaniques
International Centre for Mechanical Sciences



SMART SYSTEMS FOR VIBRATION CONTROL, ENERGY HARVESTING, TACTILE FEEDBACK, MEASUREMENT AND MONITORING

Marie Curie Graduate School
coordinated by

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UK

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Italy

ANTARES



Udine January 29 - February 1 2018

SMART SYSTEMS FOR VIBRATION CONTROL, ENERGY HARVESTING, TACTILE FEEDBACK, MEASUREMENT AND MONITORING

The CISM – Marie Curie Graduate School on Smart Systems for Vibration Control, Energy Harvesting, Tactile Feedback, Measurement and Monitoring brings together expert lecturers in the fields of vibration control, transducers and materials, control theory, signal processing, electronics and energy harvesting. The course combines academic scientific excellence with industrially-relevant applications and is organized by the partners of the on-going intersectorial EU FP7 Marie Curie Training Network project ITN ANTARES – focussing on Energy Efficient Smart Structures, and the EU H2020 Marie Skłodowska Curie Training Network project ETN ITEAM – focussing on Multi-Actuated Ground Vehicles – .

The Graduate School is organised within the technical programme of the International Centre for Mechanical Sciences (CISM) and is held at CISM premises. The school provides technical training for both Early Stage and Experienced Researchers and creates a platform for networking and knowledge exchange.

The European Commission is gratefully acknowledged for supporting the organisation of this training course through the FP7 Marie Curie project ITN ANTARES and the H2020 Marie Skłodowska Curie project ETN ITEAM.

REGISTRATION and WELCOME

Monday, January 29

13:00 - 14:00 Registration

14.00 - 14.30 Welcome

- Dr. M. Tehrani, Course Organiser - ISVR
- Dr. B. Pluymers, Marie Curie projects ANTARES and ITEAM - KU Leuven
- Prof. P. Gardonio, Deputy Secretary General - CISM

CONTENT

Part 1: Fundamentals of active vibration control

Monday, January 29

14.00 - 15.15 Active-Semi Active Vibration Isolation Part I

Prof S. Daley (ISVR - University of Southampton)

15.15 - 16.00 Active-Semi Active Vibration Isolation Part II

Prof S. Daley

16.00 - 16.30 Coffee break

16.30 - 17.15 Multi-Channel feed-forward Vibration Control

Prof. S.J. Elliott (ISVR – University of Southampton)

17.15 - 18.00 Multi-variable control

Prof. S.J Daley

19.30 Course dinner

Tuesday, January 30

9.00 - 9.45 Nonlinear velocity feedback for dynamic range control

Prof. S.J. Elliott

9.45 - 10.30 Active vibration control of time-varying and nonlinear systems

Dr. M. Tehrani (ISVR – University of Southampton)

10.30 - 11.00 Coffee break

Part 2: Smart Systems for Vibration Energy Harvesting

11.00 - 11.45 Transducers for vibration energy harvesting

Prof. P. Gardonio (University of Udine)

11.45 - 12.30 Piezoelectric and electromagnetic seismic harvesters

Prof. P. Gardonio

12.30 - 14.30 Lunch

14.00 - 15.15 Nonlinear and parametric energy harvesters: Application to trains

Dr. M. Tehrani

15.15 - 16.00 Electronic circuits for vibration energy harvesting

Prof. S. Saggini (University of Udine)

16.00 - 16.30 Coffee break

16.30 - 17.15 Energy harvesting systems: Considerations for practical applications

Prof. T. Bein (LBF Darmstadt)

17.15 - 18.00 Methodical design of vibration energy harvesting systems

Dr. D. Mayer (LBF Darmstadt)

Wednesday, January 31

Part 3: Smart Systems for Vibration Tactile Feedback

9.00 - 9.45 Fundamentals on Human Tactile Impressions

Dr. J. Twiefel (Leibniz Universität Hannover)

9.45 - 10.30 Model-based and experimental identification of interface properties

Dr. J. Twiefel

10.30 - 11.00 Coffee break

11.00 - 11.45 Concepts and Design of Tactile Displays

Dr. J. Twiefel

11.45 - 12.30 Modeling of piezoelectric elements utilizing the transfer matrix method

Dr. J. Twiefel

12.30 - 14.30 Lunch

14.00 - 15.15 Self-sensing in piezoelectric elements

Dr. J. Twiefel

15.15 - 16.00 Optimization of piezoelectric elements for applications in tactile displays

Dr. J. Twiefel

16.00 - 16.30 Coffee break

Part 4: Smart Systems for Vibration Measurement and Monitoring

16.30 - 17.15 Output-only and virtual sensor estimation

Dr. A.P. Berkhof (University of Twente)

17.15 - 18.00 Transfer path tracking for vibroacoustic control

Dr. A.P. Berkhof

Thursday, February 1

9.00 - 9.45 Virtual sensing using reduced order high fidelity models

Dr. F. Naets (KU Leuven)

9.45 - 10.30 Vibration based condition monitoring of complex mechanical systems

Prof. K. Gryllias (KU Leuven)

10.30 - 11.00 Coffee break

11.00 - 11.45 Vibration (and acoustic) control for environmental testing

Dr B. Peeters (SIEMENS)

11.45 - 12.30 Autonomous Smart Systems for Vibration Measurements

Dr. I. Gabilondo (IKERLAN)

12.30 - 14.30 Lunch