

## ADMISSION AND ACCOMMODATION

The registration fee is Euro 390,40 (Euro 320,00 + 22% Italian 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 March 18, 2016.

Applications should be made on-line through our web site: <http://www.cism.it/courses/E1602/>.

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.

For further information please contact:

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ACADEMIC YEAR  
2016

Centre International des Sciences Mécaniques  
International Centre for Mechanical Sciences



# SMART STRUCTURES FOR VIBRO-ACOUSTIC CONTROL

CISM - Marie Curie Graduate School  
coordinated by

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**Udine April 18 - 21 2016**

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# SMART STRUCTURES FOR VIBRO-ACOUSTIC CONTROL

The CISM – Marie Curie Graduate School on Smart Structures for Vibro-Acoustic Control brings together expert lecturers in the fields of vibro-acoustic analysis, active & passive noise and vibration control and lightweight vibro-acoustic materials. The course combines academic scientific excellence with industrial relevant applications and is organized by the partners of three running intersectoral EU FP7 Marie Curie Training Network projects: ITN ANTARES – focussing on smart structures, ITN EMVeM – focussing on energy efficient technology development and EID eLiQuiD – focussing on NVH of electrified vehicles. The organizers are supported by a number of invited guest speakers and by several other Marie Curie projects such as ITN BATWOMAN, EID CRANE, IAPP DEMETRA, EID ARRAYCON, ITN MARE-WINT and ITN TANGO.

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.

## REGISTRATION and WELCOME

**Monday, April 18**

**13:00 - 13:45 Registration**

**13.45 - 14.00 Welcome**

- Prof. P. Gardonio, Course Organiser
- Prof. W. Desmet and Dr. B. Pluymers, Coordinators ANTARES, EMVeM, eLiQuiD Marie Curie Projects
- Prof. A. Soldati, Scientific Board CISM

## CONTENT

**Monday, April 18**

**Basic principles in vibro-acoustics**

*Sas P.* (KU Leuven)

- 1 Introduction to technical acoustics
- 2 Basics on Noise and Vibration Control

*Pluymers B.* (KU Leuven)

- 3 Introduction to numerical acoustics

*Tournour M.* (SISW)

- 4 Advanced Vibro-acoustic CAE

**Tuesday, April 19**

**Smart Passive Systems for vibro-acoustic control**

*Desmet W.* (KU Leuven)

- 1 Introduction of passive noise and vibration control

*Deckers E.* (KU Leuven)

- 2 Vibro-acoustic testing of lightweight panels

*Rouleau L.* (CNAM)

- 3 Visco-elastic material solutions – theory

- 4 Visco-elastic material solutions – practice

*Dazel O.* (LAUM)

- 5 Poro-elastic material solutions – theory

- 6 Poro-elastic material solutions – practice

*Claeys C.* (KU Leuven)

- 7 Lightweight Meta-materials – theory

- 8 Lightweight Meta-materials – practice

**Wednesday, April 20**

**Smart Active Systems for vibro-acoustic control**

*Elliott S.J.* (ISVR)

- 1 Fundamentals of Active Noise Control

*Ghandchi-Tehrani M.* (ISVR)

- 2 Fundamentals of Active Vibration Control

*Elliott S.J.* (ISVR)

- 3 SISO and MIMO feed-forward control algorithms

*Ghandchi-Tehrani M.* (ISVR)

- 4 Feedback control

*Gardonio P.* (UniUD)

- 5 Sound Radiation: radiation modes

- 6 Electrodynamic transducers for Active Structural Acoustic Control

- 7 Smart Panels for Active Structural Acoustic Control – Part I

- 8 Smart Panels for Active Structural Acoustic Control – Part II

**Thursday, April 21**

**Industrial applications of vibro-acoustic control**

*Vansant K.* (SISW)

- 1 Vibro-acoustic CAE from a practical perspective

*Bein T.* (LBF)

- 2 Industrial applications of smart materials

*Bonsi D. and Urbanet C.* (ELECTROLUX)

- 3 Active Noise Control System on domestic appliance

*Rejlek J.* (ViF)

- 4 A combined computational-experimental approach for vibro-acoustic analysis – industrial application

## TIME TABLE

TIME	Monday April 18	Tuesday April 19	Wednesday April 20	Thursday April 21
9.00 - 9.45		Desmet 1	Elliott 1	Vansant 1
9.45 - 10.30		Deckers 2	Ghandchi - Tehrani 2	Bein 2
11.00 - 11.45		Rouleau 3	Elliott 3	Bonsi / Urbanet 3
11.45 - 12.30		Rouleau 4	Ghandchi - Tehrani 4	Rejlek 4
14.00 - 14.45	Sas 1	Dazel 5	Gardonio 5	
14.45 - 15.30	Sas 2	Dazel 6	Gardonio 6	
16.00 - 16.45	Pluymers 3	Claeys 7	Gardonio 7	
16.45 - 17.30	Tournour 4	Claeys 8	Gardonio 8	

