



SHORT COURSE ON BASICS OF LARGE SHAKE TABLE TESTING

■ Registration to the short-course

Participants to the short-course will have to register on-line filling the registration form on the section relative to the training course for academics (for more information please visit www.eucentre.it). After receiving the confirmation of availability from Eucentre, the participants should confirm their attendance to the course paying the registration fee. The participants should then send a copy of the payment via fax (+39.0382.529131) or e-mail: corsi@eucentre.it.

The number of participants will vary between 30, the minimum required for the actual delivery of the short-course, and 50. Selection will be made on the base of the order of registration. The registration fee is 450€ + V.A.T. and it will include didactic material, lunch and coffee breaks. Special financial conditions are in place for students, to whom a fee of 350€ + V.A.T. is requested. Payment can be done via credit card or bank transfer to Centro Europeo di Formazione: (IBAN IT36S050481130200000042461), Banca Popolare Commercio e Industria - Strada Nuova 61/C, 27100 Pavia (Italy), name of the participant and title of the short course should be specified. More accurate payment instructions will be sent by e-mail. Cancellation of attendance during the last 3 days before the course will imply a cost to the participant equal to 30% of the registration fee.



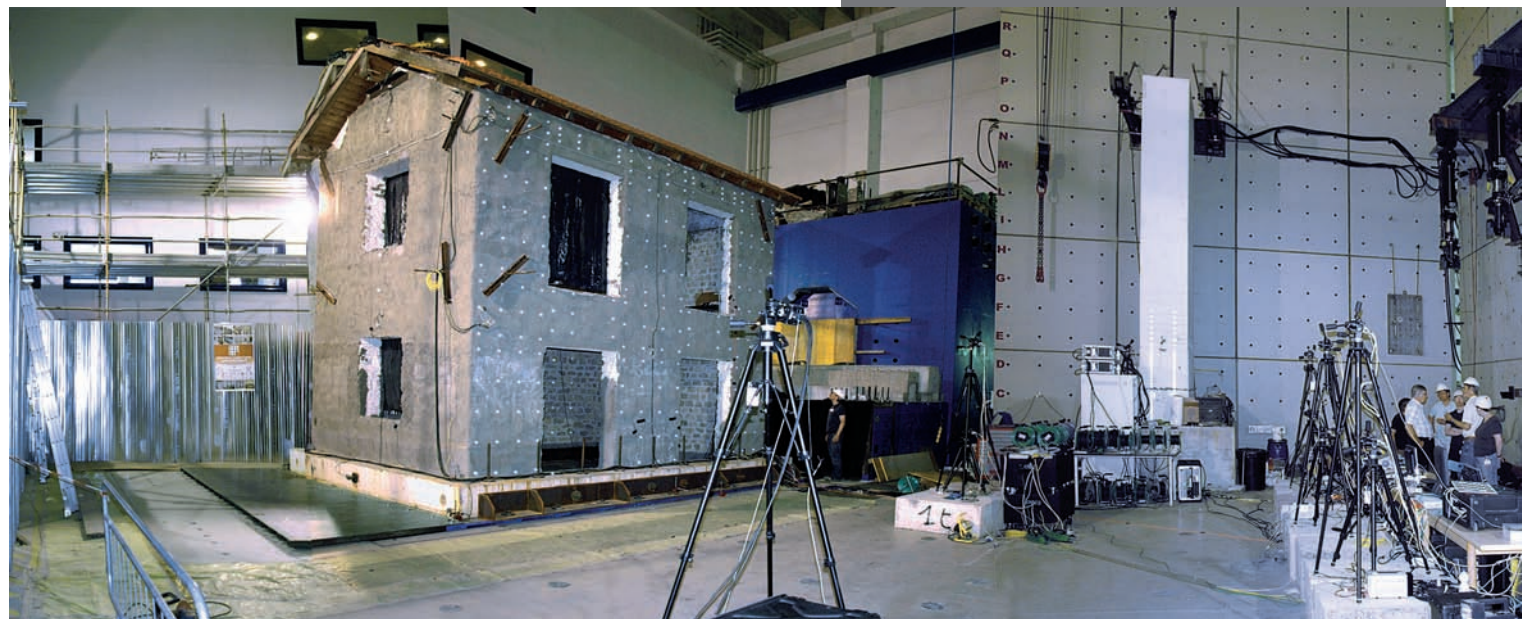
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SHORT COURSE ON

BASICS OF LARGE SHAKE TABLE TESTING

Pavia **7-8-9 April 2011**



■ Abstract

The use of current materials and technologies, as well as the need for new solutions, requires a solid base of understanding of performance of structures and structural components obtained through experiments. The course will introduce the theory and practice of laboratory operations to be performed when dealing with shake table testing. Several aspects and issues will be revised, including:

- Test instrumentation and acquisition systems: sensors, transducers, digital acquisition, software, etc.
- Basics of signal processing: signals and systems, random vibrations analysis, frequency/time domain analysis, noise and filters, FFT and inverse FFT, cross spectrum, cross correlation, linear/nonlinear systems, time-frequency analysis.
- Signal processing lab: examples illustrating basic concepts.
- Test systems (shake table, actuation, pumping, accumulators): description of a shake table system (plate actuators, cooling systems, servo valves), limitations and advantages (force, degrees of freedom, stroke, etc.), hydraulics (circuit, pumps, accumulators) controllers (different loops, geometric compensation, force balance, etc.), software to perform time history, random excitation and sine sweep, test procedure (pre test, iterative computation, etc.), interpretation of shake table performance curves.
- Design of specimen: principles of dimensional analysis, scale effects, compliance with system performances.
- Testing strategy: test sequence, controller issues (calibration and time history distortion).
- Laboratory, data acquisition and reduction: transducers setup, data post-processing, experimental/numerical comparison.

■ Course Programme

7 April 2011

13.50	Registration
14.00	Course introduction Prof. A. Pavese
14.15-15.15	Data acquisition systems Prof. G. Magenes
15.15-16.15	Design of test instrumentation Dr. F. Dacarro
16.15-16.30	Coffee Break
16.30-17.30	Computer vision in experimental testing Dr. F. Lunghi
17.30-18.30	Design of specimen Dr. A. Penna

8 April 2011

9.00-11.00	Test systems Dr. J. C. Queval
11.00-11.15	Coffee Break
11.15-12.15	Shake table tests at TREES Lab Prof. A. Pavese
12.15-13.15	Testing strategy Prof. A. Pavese
13.15-14.15	Lunch
14.15-16.15	Basics of signal processing with examples Dr. C. Casarotti
16.15-16.30	Coffee Break
16.30-18.00	Basics of signal processing with examples Dr. C. Casarotti

9 April 2011

9.00-11.00	Data reduction and interpretation of the acquired signals Dr. Lunghi, Dr. Peloso, Dr. Casarotti
11.00-11.15	Coffee Break
11.15-12.15	Data reduction and interpretation of the acquired signals Dr. Lunghi, Dr. Peloso, Dr. Casarotti

■ Course Coordinator

Prof. Alberto Pavese

Department of Structural Mechanics, Faculty of Engineering, University of Pavia, Pavia (Italy). Director of TREES Lab

■ Lecturers

Dr. Chiara Casarotti

European Centre for Training and Research in Earthquake Engineering (EUCENTRE), Pavia (Italy).

Dr. Filippo Dacarro

European Centre for Training and Research in Earthquake Engineering (EUCENTRE), Pavia (Italy).

Dr. Francesco Lunghi

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Prof. Giovanni Magenes

Computer Science Department, Faculty of Engineering, University of Pavia, Pavia (Italy).

Dr. Simone Peloso

European Centre for Training and Research in Earthquake Engineering (EUCENTRE), Pavia (Italy).

Dr. Andrea Penna

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Dr. Jean-Claude Queval

Queval Consulting, Ablis (France)

■ Course Responsible

Prof. Gian Michele Calvi

President of the European Centre for Training and Research in Earthquake Engineering (Eucentre) and director of the centre for graduate studies and research in Earthquake Engineering and Seismology (ROSE School, www.roseschool.it).

■ How to reach us

Eucentre is placed in the Scientific Campus (Polo Cravino) of the University of Pavia. For more information please visit www.eucentre.it.

