Mercoledì 24 Settembre 2014 – Aula 17, ore 15:30

presso l'Università degli Studi di Bergamo, Dipartimento di Ingegneria (Dalmine)
viale G. Marconi 5, I-24044 Dalmine (BG), Italy

Prof. Eleni Chatzi

Institut für Baustatik und Konstruktion / Institute of Structural Engineering
ETH Zürich
E-mail: chatzi@ibk.baug.ethz.ch

Visiting Professor at UniBG within "Project ITALY®"

SEMINAR

Efficient forward and inverse engineering via structural identification and multiscale computation

Ref. Prof. Egidio Rizzi, egidio.rizzi@unibg.it

SEMINAR

Efficient forward and inverse engineering via structural identification and multiscale computation

Prof. Eleni Chatzi

Institut für Baustatik und Konstruktion / Institute of Structural Engineering
ETH Zürich
E-mail: chatzi@ibk.baug.ethz.ch

Università degli Studi di Bergamo, Dipartimento di Ingegneria (Dalmine)
viale G. Marconi 5, I-24044 Dalmine (BG), Italy
Mercoledì 24 Settembre 2014, ore 15:30

ABSTRACT

In recent years, emerging technologies have led to the construction of complex novel structural systems, while at the same time a large part of existing infrastructure is reaching the end of its design life-cycle. Developed societies are therefore now met with the urgent need for sustainable and resilient systems. This task is by far not a straightforward one, as all structural systems are inherently characterized by uncertainty due to a number of factors including lack of knowledge of the system, limited information on input loads, potential nonlinear behavior and ageing effects. The use of sensory information for the monitoring and identification of infrastructure allows the limiting of such uncertainties towards assessing structural integrity and ensuring safe operation and resilience.

In this presentation, developments in state-of-the-art algorithms for behavior that lies beyond the usual assumption of the linear range will be presented, focusing on structural identification and multiscale methodologies that can efficiently simulate complex systems and quantify their uncertainty in reduced computational time. The proper combination of theoretical tools with suitable hardware resources can ultimately lead to a “smart infrastructure management system”.

Prof. Eleni Chatzi is Assistant Professor at the Institute of Structural Engineering, ETH Zurich since 2010. She has obtained her Diploma (2004) and MSc (2006) in Civil Engineering from the Department of Civil Engineering at the National Technical University of Athens (NTUA). She then pursued graduate studies at the Department of Civil Engineering and Engineering Mechanics at Columbia University, New York, where she was awarded the degrees of M.Phil. and Ph.D. in 2008 and 2010, respectively. She has published numerous articles in peer-reviewed international journals with particular focus on system identification methods and topics relating to Structural Health Monitoring, vibration monitoring, and nonlinear dynamics.

Ref. Prof. Egidio Rizzi, egidio.rizzi@unibg.it