Department of Civil and Environmental Engineering

DISTINGUISHED SEMINAR

Vibration-based Structural Health Monitoring of Historic Structures

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103 Churchill Hall

12:00 PM

This seminar is free and open to the public.

Abstract: Structural Health Monitoring (SHM) is generally defined as a multi-disciplinary process involving: (a) the repeated or continuous measurement of the response of a structural system through arrays of appropriate sensors; (b) the extraction from measured data of features, which are representative of the health condition and (c) the statistical analysis of these features to detect any novelty or abnormal change in the investigated system.

Among the different SHM strategies, the fully non-destructive nature and the minimum impact of the vibration monitoring makes the approach based on operational modal analysis (OMA) especially suitable to address the preservation of Cultural Heritage structures and also to avoid, in some cases, inappropriate strengthening interventions. In the lecture, the main ideas of OMA-based SHM of historic structures are presented and exemplified through the application to both relatively simple and very complex buildings, such as towers and cathedrals.

Bio: Dr. Carmelo Gentile is a professor at the Politecnico di Milano Department of Architecture, where he received his BSc and MSc in Structural Engineering and PhD in Structural and Earthquake Engineering. He serves as the Director of Politecnico di Milano's Laboratory of Vibrations and Dynamic Monitoring of Structures. He is the author or co-author of about 300 scientific and technical papers in international journals, books and at international conferences, covering topics from cultural heritage structures and ambient vibration testing to microwave remote sensing and structural health monitoring.

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