Dottorato Industriale
Analisi e Controllo di Strutture e Opere d'arte Infrastrutturali

AVVISO DI SEMINARIO

Dynamical identification of damage in a reinforced concrete bridge

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Wednesday, **December 4, 2024** at **9.30** a.m.
Aula Villaggio, Building A first floor, Structural Division.
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Abstract

The results of a series of harmonically forced tests carried out on a reinforced concrete single-span bridge subjected to increasing levels of damage are presented and interpreted in this talk. The deck structure of the bridge consists of a slab and three simply supported beams. The damage is represented by a series of notches made on a lateral beam to simulate the effect of incremental concentrated damage. The variation of lower natural frequencies shows an anomalous increase in the transition from one intermediate damage configuration to the next ones. Vibration mode shapes show an appreciable asymmetry in the reference configuration, despite the nominal symmetry of the bridge. A justification of this unexpected dynamic behavior is suggested. The analysis is based on the progressive identification of an accurate finite element model of the reference configuration of the bridge and on the reconstruction of damage evolution from natural frequency and vibration mode measurements. Changes in modal curvature of the first two vibration modes evaluated along the main beams are successfully used to identify the location of the damage

Organization and Contact details

Seminar organised in the context of the initiatives promoted by the PhD course: ***Dottorato in Analisi e Controllo di Strutture e Opere d'arte Infrastrutturali****.*

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Pisa, December 4, 2024.

(Prof. Ing. Walter Salvatore)