PhD DISG

Director
Patrizia Trovalusci

Sapienza Università di Roma
PhD Program in
Structural and Geotechnical Engineering

May 29, 2025 - 2:00pm-6:00pm
May 30, 2025 - 9:00am-1:00pm

Prof. Paolo Venini

Associate Professor, Department of Civil and Architectural Engineering (DICAr) – University of Pavia

An innovative approach to static and dynamic topology optimization with practical applications including multimaterial structures

An innovative approach to topology optimization is presented that is based on the minimization of a proper norm of the input/output transfer matrix G. The singular value decomposition (SVD) of G is shown to be the key ingredient of the proposed optimization strategy that applies to static and dynamic topology optimization, with nearly no modifications. Alongside the theoretical derivations, the class is introduced to the coding of the proposed approach in the Matlab environment as far as the static regime is concerned, whereas hints are given for the extension to dynamic response. The optimization of exoskeletal systems that minimize the response of 3D framed structures to horizontal environmental actions is one of the results of practical interest that are achieved as is a formulation for multimaterial topology optimization. Multimaterial structures are eventually addressed using a peculiar material interpolation scheme that generalized the classic SIMP idealization.

Program:
https://phd.uniroma1.it/web/course---an-innovative-approach-to-static-and-dynamic-topology-optimization-with-practical-applications-including-multimaterial-structures_nS22705EN_EN.aspx

Registration form:
https://forms.gle/ngmmosLvKhb5AaXH6

SAPIENZA
UNIVERSITÀ DI ROMA