



Director  
Patrizia Trovalusci

# Sapienza Università di Roma

## PhD Program in Structural and Geotechnical Engineering

May 10, 2023 - 2:00pm-6:00pm

May 11, 2023 - 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

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.

Program:

[https://phd.uniroma1.it/web/course---an-innovative-approach-to-static-and-dynamic-topology-optimization-with-practical-applications\\_ns5136EN\\_EN.aspx](https://phd.uniroma1.it/web/course---an-innovative-approach-to-static-and-dynamic-topology-optimization-with-practical-applications_ns5136EN_EN.aspx)

Registration form:

<https://forms.gle/ZERqt23iwoQHqxQT8>



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