



ENGINEERING STRUCTURES

2023 Engineering Structures (America/Europe)

Academic Forum Series

Title: New trends in the advanced computational modelling of historical masonry structures subjected to horizontal loads

Speaker: Prof. Gabriele Milani

**Department of Architecture, Built Environment
and Construction Engineering ABC**

Technical University of Milan, Milan, Italy

Time: 15:00-16:00 pm CEST (9:00-10:00 am EST), July 14, 2023

Zoom Meeting ID: 950 2694 9183

Abstract:

Several different non-conventional numerical strategies to deal with historical masonry structures subjected to horizontal loads are reviewed. Particular attention is devoted to limit analysis upper bound methods based on a discretization of the domain either with NURBS volumes or full 3D elements. In the first family of approaches, particular attention is devoted to both the case of a heterogeneous modelling for complex 3D geometries and a homogeneous discretization where the mesh is progressively adapted by means of meta-heuristic strategies aimed at reproducing with high fidelity the actual failure mechanism active. The second family is characterized by the possibility to deal with massive structures (like for instance masonry pagodas) and approximate iteratively the no-tension material case, a feature particularly important in the vulnerability evaluation of existing aggregates. Several examples of application are recalled, as for instance domes and double curvature vaults, towers and pagodas, arches and bridges, and masonry aggregates.

Brief Biography:

Gabriele Milani, Eng. PhD, is Full Professor of Structural Mechanics at the Department of Architecture, Built Environment and Construction Engineering, Technical University of Milan, Italy. Previously Associate (2014-2019) and Assistant Professor (2008-2014) in the same university. Chair professor at Yangzhou University, PRC (2019-2020), and visiting at Newcastle University, UK (2016, 2017). His scientific interests are manifold and include masonry modelling and experimentation, seismic engineering, preservation of historical constructions, limit analysis, innovative strengthening with composite materials, elastomeric seismic isolation. He published more than 300 papers in high-impact international journals in different fields of structural mechanics, he edited several books and co-authored many book chapters, he was invited as keynote speaker in internationally recognized conferences and co-chaired the 18th International Masonry Conference in 2018. He will co-chair the next IB2MaC in 2024 (Birmingham, UK). He is EB member in both high-reputation journals and international congresses, he was awarded a Most Cited Author Award for a paper in Computers & Structures, a Telford Premium and a K.J. Bathe Award.

