

## **Strengthening masonry structures through Fiber-Reinforced Cementitious Matrix (FRCM) composites**

### **SPEAKER**

#### **Fulvio Parisi**

Assistant Professor of Structural Engineering, Ph.D.  
Department of Structures for Engineering and Architecture  
University of Naples Federico II  
Via Claudio 21, 80125 Naples, Italy  
Email: [fulvio.parisi@unina.it](mailto:fulvio.parisi@unina.it)  
Tel.: +39-081-7683659  
Fax: +39-081-7685921  
Website: <http://wpage.unina.it/fulvio.parisi>



### **ABSTRACT**

Unreinforced masonry (URM) has been used to build up a large number of structures and infrastructure systems since ancient times. In many earthquake-prone countries, a large number of existing URM buildings have been designed to resist only gravity loads. In some cases, such buildings have been designed for earthquake resistance while considering seismic actions significantly lower than those expected by current codes. Based on these considerations and heavy damage observed after past earthquakes, many URM buildings urgently need seismic strengthening to meet performance objectives prescribed by codes. Besides, traditional strengthening techniques are often too invasive for historical masonry constructions so that they are not approved by local/government offices for cultural heritage preservation. In this context, externally bonded reinforcement (EBR) systems based on fibre-reinforced composite materials can be effective strengthening solutions for both modern and historical masonry assets.

This seminar will address research advances and applications of EBR systems on URM structures, focusing on fibre-reinforced cementitious matrix (FRCM) composites. Capacity models based on recent international guidelines and experimental programmes will be presented, comparing URM walls externally strengthened with FRCM and fibre-reinforced polymer systems. Emphasis will be given to latest findings of full-scale laboratory tests and probabilistic analysis aimed to develop capacity models for performance-based seismic assessment. Research outcomes will show the ability of FRCM composites for a safer and sustainable strengthening of masonry structures.

### **SHORT BIOGRAPHY OF THE SPEAKER**

Fulvio Parisi is Assistant Professor of Structural Engineering of the Department of Structures for Engineering and Architecture at University of Naples Federico II, Italy, where he received his Ph.D. in Seismic Risk in 2011 with the thesis “Non-linear seismic analysis of masonry buildings”. His research mainly focuses on performance-based design and assessment of structures subjected to natural and man-made events, experimental testing of materials and structures, back-analysis of structural failures, and cultural heritage preservation. Dr. Parisi authored over 60 peer-reviewed papers and computer tools for modelling and analysis of masonry structures. Dr. Parisi is referee for 18 international journals and is involved in research programmes dealing with earthquake engineering and cultural heritage structures. He is Editorial Board member of the ASCE Journal of Performance of Constructed Facilities and Working Group member of European Association for Earthquake Engineering.