

## ***Curriculum Vitae Professor Massimo Cuomo***

### **POSITION**

Full professor of Solids and Structural Mechanics, since October 2002.

ERC sector PE8\_3

2022-present Coordinator of the PhD programme of National Interest Defense against natural risks and ecological transition of the built environment

2014-2022 Coordinator of PhD Programme “Evaluation and Mitigation of Urban and Territorial Risks”,

2008-2010 and 2013-2021 Scientific responsible of the laboratory for Mechanical Material Testing of the University of Catania

2016-2017 Invited professor at the Faculty of Production Engineering, Polytechnic of Warsaw.

### **SCIENTIFIC ACTIVITY**

Main fields of interest are:

Computational Mechanics of Solids and Structures

Non-linear structural modelling of rods and shells with innovative numerical methods (isogeometric analysis, splines...);

Form finding methods for cables and shells

Plasticity and damage mechanics of solids in the field of finite deformations;

Computational fracture mechanics;

Fibre reinforced materials

Multi-physics modelling of materials subjected to mechanical and chemical actions

Author of over 90 articles indexed by SCOPUS and of over 50 journal paper in the last 10 years

H-index 26

Number of citations > 2000

### **RESEARCH PROJECT COORDINATOR**

2023 PI of PRIN Project Modelling, Analysis and DEsign of MORphing SHElls. MADEMOSHE

2020 Vinci Project “Mécanique des reseaux et tissus innovants à usage structure”

2013 Galileo Project financed by Université Francais-Italienne.

2008-2011 Scientific responsible of a PhD programme en co-tutéle with l'Université Marne La Vallée, Paris

2016-2019 Scientific responsible of a PhD programme en co-tutéle with l'ENTPE, Université de Lyoin  
Scientific responsible of joint projects with Polytechnique of Helsinki,  
Project of Joint Action with Universitat Politecnica de Catalunya, Barcelona

### Other PRIN projects

- 2003/04 PRIN project “Chemo-mechanic model for the analysis of damage in concrete elements subjected to triaxial stress states” (local coordinator).
- 2001/02 PRIN project “Continuous models of damage for high strength fibre-reinforced concrete” (PRIN project “High performance concrete: methods for analysis and design”) (local coordinator)
- 1999/00 PRIN project “Models and identification of high performance concrete with microfibres” (PRIN project “Analysis and experimentation on structures with special concrete”) (local coordinator)
- 1998/99 PRIN project “ Diagnosis of masonry vaults of the Sicilian baroque building heritage2 (PRIN project “The vaults of the building heritage”) (local coordinator)
- 1996 PRIN project “Theoric and experimental evaluation of the mechanical properties of masonry materials using homogenization techniques” (PRIN project “Problems of historical constructions”) (local coordinator)
- 1995 PRIN project “Implementation and validation of a model of structural analysis for masonry elements based on an equivalent continuum” (local coordinator)
- 1994 PRIN project “Evaluation of the mechanical properties of historical masonries and their influence on the structural response” (local coordinator)
- 1991/93 Cofin project “Materials and structures with unilateral behaviour.

### CNR Projects

- 1998/99 Typological and structural analysis of masonry vaults of the baroque Sicilian heritage (local coordinator)
- 1996/97 Evaluation of the static degradation of monumental structures
- 1994/95 Evaluation of the mechanical properties of historic masonries with homogenization techniques.
- 1993-1997 scientific coordinator of the research "Ancient building materials and building technologies of Eastern Sicily, with special interest for lava stones", financed by the National Secretariat for Cultural Heritage.

### Research projects financed by private enterprises

- 2018/19 Promostand srl, Analysis of a tendo-structure subjected to blast
- 2020/21 TRADIMALT Analysis of the effectiveness of FRCM reinforcement

## **RESPONSIBILITIES IN SCIENTIFIC ASSOCIATIONS**

- 2007-2013 National coordinator of the Italian Group of Computational Mechanics (GIMC)
- 2008-2013 Member of the General Assembly of ECCOMAS (European Congress on Computational Methods in Applied Sciences and Engineering.) and of the General Council of IACM (International Association of Computational Mechanics)
- 2011-present Member of the international research centre M&MOCS, Mathematics and Mechanics of Complex Systems, for which has organized the conference "The new frontiers of glass: technological innovations, advanced applications for building industry and state of knowledge", 2016 and the workshop Computational Mechanics of Generalized Continua and Applications to Materials with Microstructure, Catania, 2015. Is
- 2018-present Coordinator of the section Computational mechanics of generalized continua (COMECH) of The Francois COSSERAT–Tullio LEVI–CIVITA INTERNATIONAL ASSOCIATED LABORATORY (promoted by CNRS, Fédération Francilienne de Mécanique Matériaux Structures et Procédés CNRS FR 2009, France and by The International Research Center on Mathematics and Mechanics of Complex Systems)

## **EDITORIAL BOARD MEMEBERSHIPS**

Member of the editorial board of Nanomechanics Science and Technology: An International Journal and of PNRPU Mechanics Bulletin, both indexed on SCOPUS.

Member of the editorial board of Modern Engineering, edited in Poland Has been member of the editorial board of The open Numerical Methods Journal.

Referee for many leading journal in solids and structural mechanics, among which Journal of European Mechanics A/Solids, International Journal of Solids and Structures, Computer and Structures, International Journal of Fracture, Int. J. Numer. Meth. Engn., ASCE J. Struct. Mech., CMAME, KSCE, Composite Structures, Journal of Composites B, Thin Walled Structures, etc., and has been referee for national and international research projects.

## **TEACHING EXPERIENCES**

Currently teaches the course of Strength of Materials (Scienza delle Costruzioni), 9 CFU, in the undergraduate course for Industrial Engineering, and the course of Computational Mechanics in the graduate course for Structural Engineering (9 CFU).

Has been supervisor of over 100 graduation theses and tutor of 18 PhD students, also from foreign universities. Among his former PhD students, five are currently Full or Associated Professor in national and international universities, one is assistant professor in European Universities.

### Organization of doctoral advanced courses

“PhD School 2023” for the student of the PhD programme of national interest (2 weeks)

“Finite Element Methods”, held by professor R.L. Taylor (University of California at Berkeley),

“Inelastic Models”, held by professors. C. Polizzotto, G. Romano, G. Borino,

“Finite Elastic and Inelastic Deformations”

## **INSTITUTIONAL ACTIVITY**

2022-present Coordinator of the PhD programme of National Interest Defense against natural risks and ecological transition of the built environment

2014-2022 Coordinator of PhD Programme “Evaluation and Mitigation of Urban and Territorial Risks”,

2008-2010 and 2013-2021 Scientific responsible of the laboratory for Mechanical Material Testing of the University of Catania

2004-2007 Dean of the Structural Engineering Division of the University of Catania

Member of the scientific committee of the Research and Study Centre for the Culture of Risk, an interdisciplinary non-academic team.

2011-2013 of the scientific committee of the Italian Research Council for the preparation of the technical Document 210, “Instructions for the Design, Execution and Control of Constructions with Glass Structural Elements”.

## **TECHNOLOGICAL TRANSFER ACTIVITY**

Co-founder of the Spin-off of the University of Catania “GINIU”

## **PATENTS**

2020-UNCTCLE-0313880 - Sistema costruttivo antisismico per costruzioni in terra battuta - Domanda di brevetto italiano no. 102021000006644

Blocco funzionale termo-acustico (pending)