




PERSONAL INFORMATION	Salvatore Caddemi	
	 Dipartimento di Ingegneria Civile e Architettura – Università degli Studi di Catania	
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	 <a href="mailto:salvatore.caddemi@unict.it">salvatore.caddemi@unict.it</a>	
Sex Male   Date of birth 29/11/1960   Nationality Italian		
CURRENT POSITION	Full Professor of Mechanics of Structures	
RESEARCH TOPICS / EXPERIENCES	<ul style="list-style-type: none"> <li>- Constitutive modeling of elastic-plastic and no-tension materials</li> <li>- Dynamic and stochastic analysis</li> <li>- Structural and damage identification</li> <li>- Analysis of structures with singularities: static, dynamic and stability</li> <li>- Dynamic stability under conservative and non-conservative forces</li> <li>- Tensile instability</li> <li>- Unreinforced and reinforced masonry structures modeling and seismic vulnerability assessment</li> <li>- Discrete Macro-modelling of masonry structures.</li> <li>- Modelling and vulnerability assessment of masonry bridges</li> <li>- Seismic protection and retrofitting of monumental structures</li> <li>- Vulnerability assessment of art objects and museum contents</li> <li>- Closed form solutions of inhomogeneous beams in static and dynamics.</li> <li>- Closed form solutions of cracked beams in static and dynamics.</li> <li>- The Dynamic Stiffness method in the context of dynamics and stability of damaged framed systems.</li> <li>- Inverse solutions and methods of dynamic identification of damage in structures.</li> </ul>	
KEYWORDS	Nonlinear modelling of masonry structures, Discrete Macro element Method, damaged beam, discontinuous beam, inhomogeneous beams, seismic vulnerability, seismic protection, seismic retrofitting, damaged framed system, masonry bridges, infilled frames, seismic isolation of art objects, damaged structures, discrete macro element modelling.	
SCIENTIFIC / TECHNICAL QUALIFICATION (source: please specify i.e. Scopus, Google Scholar, IRIS)	- H-index (if applicable)	- 25 (Scopus October 2 <sup>nd</sup> 2025)
	- No. publications (relevant with respect to the "KEYWORDS"):	- 104 (Scopus October 2 <sup>nd</sup> 2025)
	- No. citations (if applicable):	- 2219 (Scopus October 2 <sup>nd</sup> 2025)

## EDUCATION AND TRAINING

1990	Ph.D. in Structural Engineering
1984	Master Degree in Civil Engineering cum laude (23 years old), University of Palermo, Italy

## WORK EXPERIENCE

Since 2001	Full Professor
	University of Catania, Piazza Università 2, Catania, <a href="https://www.unict.it/">https://www.unict.it/</a>
From 1998 To 2001	Associated Professor

	University of Catania, Piazza Università 2, Catania, <a href="https://www.unict.it/">https://www.unict.it/</a>
From 1996 To 1997	Visiting Researcher at "Department of Structural Engineering and Materials" of Technical, University of Denmark, Lingby, Denmark
From 1991 To 1998	University researcher
	University of Palermo, Viale delle Scienze 4, Palermo, <a href="https://www.unipa.it/">https://www.unipa.it/</a>
From 1990 To 1991	Post-Doctoral Research Fellow
	University of Palermo, Viale delle Scienze 4, Palermo, <a href="https://www.unipa.it/">https://www.unipa.it/</a>
From 1988 To 1989	Research Officer
	"FRD/UCT Centre for Research in Computational and Applied Mechanics", University of Cape Town, South Africa

## MAIN ROLES AND RESPONSIBILITIES

From 2003 To 2005	- Coordinator of the Catania Research Unit within the national project PRIN 2003 "Procedures for identification of geometrical and physical parameters of structural systems".
From 2017 To 2020	- Coordinator of the Catania Research Unit within the national project PRIN 2015 "Advanced mechanical modeling of new materials and structures for the solution of 2020 Horizon challenges".

## SERVICE TO NATIONAL AND INTERNATIONAL COMMUNITY (i.e. editor of national or international journals, Chair-person of national or international committees, member of ISC or Advisory Boards, other relevant positions in national or international bodies, etc.)

Since 2020	- Editor: Academic Editor of Building
Since 2013	- Editor: Academic Editor of Mathematical Problems in Engineering
Since 2015	- Editor: Academic Editor of Shock and Vibration
Since 2000	- Reviewer: Applied Mathematical Modeling
Since 2000	- Reviewer: Archive of applied mechanics
Since 2000	- Reviewer: Computer & Structures
Since 2000	- Reviewer: Construction and Building Materials
Since 2000	- Reviewer: Earthquake Engineering and Structural Dynamics

Since 2000	- Reviewer: Engineering Structures
Since 2000	- Reviewer: International Journal of Solids and Structures
Since 2000	- Reviewer: Journal of Sound and Vibration
Since 2000	- Reviwer: Journal of Vibration & Control
Since 2000	- Reviewer: Meccanica
Since 2000	- Reviewer: Structural Engineering and Mechanics
Since 2000	- Reviewer: Structures
Since 2000	- Member: Associazione Italiana di Meccanica Teorica e Applicata (AIMETA)
Since 2000	- Member: Europeans Mechanics Society (EUROMECH)
Since 2000	- Member: Associazione Nazionale Italiana Ingegneria Sismica (ANIDIS)

## TEACHING EXPERIENCE

From 2020 To 2025	- Professor: Mechanic of Structures
From 2012 To 2020	- Professor: Structural Mechanics
From 2010 To 2011	- Professor: Inelastic analysis of structures
From 2005 To 2010	- Professor: Structural Mechanics
From 2003 To 2010	- Professor: Strength of Materials
From 1998 To 2003	- Professor: Structural Mechanics
From 1995 To 1998	- Professor: Reliability of Structures
From 1995 To 1998	- Professor: Structural Mechanics

## MAIN RESEARCH EXPERIENCE

Since 2015	- Member of an international group doing and promoting research on the dynamic stiffness method which promotes international workshops based on invited lectures
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## OTHER RELEVANT EXPERIENCES

2024	- Consulenza tecnico scientifica per la valutazione della vulnerabilità sismica dell'edificio sede INGV di Catania e individuazione di una strategia di miglioramento sismico. Consulenza tecnico-scientifica per L'Istituto Nazionale di Geofisica e Vulcanologia di Catania (INGV)
2024	- Consulenza tecnico-scientifica finalizzata al controllo della prestazione strutturale dei Terminal A e C dell'aeroporto Catania Fontanarossa. Consulenza Scientifica a "Società Aeroporto Catania (SAC)

2023	- Consulenza scientifica per lo studio teorico e sperimentale di materiali per il rinforzo delle strutture voltate e ponti in muratura. Consulenza Scientifica a "Tradimalt S.p.a."
2021	- Strategie di modellazione numerica di sistemi di rinforzo da applicare a tipologie murarie tipiche del patrimonio artistico-architettonico siciliano. Convenzione di Ricerca con "Tradimalt S.p.a."
2020	- Numerical modeling of strategic buildings finalized to dynamic identification, research convention with Italian National Research Council.
2018	- Support to bridge inspection activity along the CircumEtna railway of Catania, Scientific consultancy.
2018	- INNTECH SRL Patent engineering of a seismic isolator, Scientific consultancy.

#### HONOURS, AWARDS, MEMBERSHIPS, OTHER QUALIFICATIONS

2023	- invited keynote presentation titled 'An advanced discontinuous Timoshenko beam model for the analysis of free and forced vibrations of multi-cracked systems' within the 13th International Symposium on Vibrations of Continuous Systems, Pomeroy, Kananaskis Mountain Lodge, Alberta, Canada, July 30th - August 4th, 2023
2019	- invited keynote presentation titled 'Explicit dynamic solutions of damaged beams' within the 12th International Symposium on Vibrations of Continuous Systems, SportHotel Panorama, Corvara in Badia, Italy
2015	- invited keynote lecture titled 'The role of shear deformation in the tensile instability of beam-columns' within the ISVCS10 10th International Symposium on Vibrations of Continuous Systems, Stanley Hotel, Estes Park, Colorado, USA
2008	- invited keynote lecture titled 'Generalised Functions for Modelling Singularities: Direct and Inverse Problems' within the IUTAM2008 Symposium on Theoretical, Computational and Modelling Aspects of Inelastic Media, Cape Town, South Africa

#### ADDITIONAL INFORMATION

2025	- member of the scientific committee of SEMC2025 The Eighth International Conference on Structural Engineering, Mechanics and Computations, 1-3 September 2025, Cape Town, South Africa
2022	- member of the scientific committee of SEMC2022 The Eighth International Conference on Structural Engineering, Mechanics and Computations, 5-7 September 2022, Cape Town, South Africa
2013	- member of the scientific committee of SEMC2013 The Fifth International Conference on Structural Engineering, Mechanics and Computations, 2-4 September 2013, Cape Town, South Africa
2018	- member of the scientific committee of SER4SC 2018 Seismic and Energy Renovation for Sustainable Cities, International Conference, 1-3 February 2018, Catania, Italy
2007	- member of the scientific committee of SEMC2007 The Third International Conference on Structural Engineering, Mechanics and Computations, 10-12 September 2007, Cape Town, South Africa

**Publications (selected 20 publications)**

- [1.] B. Pantò, S. Caddemi, I. Calìo, E. Spacone  
“A 2D beam-column joint macro-element for the non-linear analysis of RC frames”,  
Earthquake Engineering and Structural Dynamics, 1-19, 2020.  
DOI: 10.1002/eqe.3375
- [2.] A. Greco, I. Fiore, G. Occhipinti, S. Caddemi, D. Spina, I. Calìo,  
“An Equivalent Non-Uniform Beam-Like Model for Dynamic Analysis of Multi-Storey Irregular Buildings”  
Applied Sciences, 10, 3212, 2020.  
DOI 10.3390/app10093212
- [3.] F. Cannizzaro, N. Impollonia, S. Caddemi, I. Calìo,  
“Explicit dynamic response of damaged beams with applications to uncertain and identification problems”,  
Journal of Sound and Vibration, 487, 115608, 2020.  
DOI: 10.1016/j.jsv.2020.115608
- [4.] A. Greco, A. Pluchino, S. Caddemi, I. Calìo, F. Cannizzaro  
“On profile reconstruction of Euler-Bernoulli beams by means of an energy based genetic algorithm”,  
Engineering with Computers, published on line 10Jan2019.  
DOI 10.1007/s00366-018-00693-x
- [5.] B. Pantò, D. Rapicavoli, S. Caddemi, I. Calìo,  
“A Fibre Smart Displacement Based (FSDB) beam element for non linear analysis of reinforced concrete members”,  
International Journal of NonLinear Mechanics, 117, 103222, 2019.  
DOI 10.1016/j.ijnonlinmec.2019.07.007
- [6.] F. Cannizzaro, B. Pantò, S. Caddemi, I. Calìo  
“A Discrete Macro-Element Method (DMEM) for the nonlinear structural assessment of masonry arches”  
Engineering Structures, 168, 243-256, 2018.  
DOI: 10.1016/j.engstruct.2018.04.006
- [7.] F. Cannizzaro, B. Pantò, M. Lepidi, S. Caddemi, I. Calìo  
“Multi-directional seismic assessment of historical masonry buildings by means of macro-element modeling: application to a building damaged during the L'Aquila Earthquake (Italy)”  
Buildings, 7(4), 106, 2017.  
DOI: 10.3390/buildings7040106
- [8.] B. Pantò, F. Cannizzaro, S. Caddemi, I. Calìo, C. Chacara, P.B. Lourenco  
“Nonlinear Modelling of Curved Masonry Structures after Seismic Retrofit through FRP Reinforcing”,  
Buildings, 7(3), 79, 2017.

DOI: 10.3390/buildings7030079

[9.] F. Cannizzaro, J. De Los Rios, S. Caddemi, I. Calìo, S. Ilanko  
“Crack localization in beams by frequency shifts due to roving mass with rotary inertia”,  
Procedia Engineering, 199, 900–905, 2017.  
DOI: 10.1016/j.proeng.2017.09.229

[10.] F. Cannizzaro, J. De Los Rios, S. Caddemi, I. Calìo, S. Ilanko  
“On the use of a roving body with rotary inertia to locate cracks in beams”  
Journal of Sound and Vibration, 425, 275-300, 2018.  
DOI: 10.1016/j.jsv.2018.03.020

[11.] S. Caddemi, I. Calìo, F. Cannizzaro, A. Morassi  
“A procedure for the identification of multiple cracks on beams and frames by static measurements”,  
Structural Control and Health Monitoring, 25 (8), 1-19, e2194, 2018.  
DOI: 10.1002/stc.2194

[12.] A. Greco, A. Pluchino, F. Cannizzaro, S. Caddemi, I. Calìo  
“Closed-form solution based Genetic Algorithm Software: Application to multiple cracks detection on beam structures by static tests”, Applied Soft Computing, 64, 35–48, 2018.  
DOI: 10.1016/j.asoc.2017.11.040

[13.] S. Caddemi, I. Calìo, F. Cannizzaro, B. Pantò  
“New Frontiers on Seismic Modeling of Masonry Structures”,  
Frontiers in Built Environment, 3, 39, 2017.  
DOI: 10.3389/fbuil.2017.00039

[14.] S. Caddemi, I. Calìo, F. Cannizzaro  
“The Dynamic Stiffness Matrix (DSM) of axially loaded multi-cracked frames”  
Mechanics Research Communications, 84, 90-97, 2017.  
DOI: 10.1016/j.mechrescom.2017.06.012

[15.] F. Cannizzaro, A. Greco, S. Caddemi, I. Calìo  
“Closed Form Solutions of a Multi-cracked Circular Arch Under Static Loads,”  
International Journal of Solids and Structures, 121, 191-200, 2017.  
DOI: 10.1016/j.ijsolstr.2017.05.026

[16.] B. Pantò, D. Rapicavoli, S. Caddemi, I. Calìo  
“A Smart Displacement Based (SDB) beam element with distributed plasticity”  
Applied Mathematical Modelling, 44, 336-356, 2017.  
DOI: 10.1016/j.apm.2017.01.018

[17.] S. Caddemi, I. Calìo, F. Cannizzaro  
“Advances in dynamic instability: can a beam-column undergo tensile flutter?”  
Journal of Vibration and Control, 23 (8), 1309-1320, 2017.  
DOI: 10.1177/1077546315592532

- [18.] B. Pantò, F. Cannizzaro, S. Caddemi, I. Calìò  
“3D macro-element modelling approach for seismic assessment of historical masonry churches”,  
Advances in Engineering Software, ADES, 97, 40-59, 2016.  
DOI:10.1016/j.advengsoft.2016.02.009
- [19.] S. Caddemi, I. Calìò, F. Cannizzaro  
“On the dynamic instability of shear deformable beams under a tensile load”  
Journal of Sound and Vibration, 373, 82-103, 2016.  
DOI:10.1016/j.jsv.2016.03.006
- [20.] S. Caddemi, I. Calìò, F. Cannizzaro  
“Influence of an elastic end support on the dynamic stability of Beck’s column with multiple weak sections”,  
International Journal of NonLinear Mechanics, 69, 14-28, 2015.  
DOI: 10.1016/j.ijnonlinmec.2014.10.016.