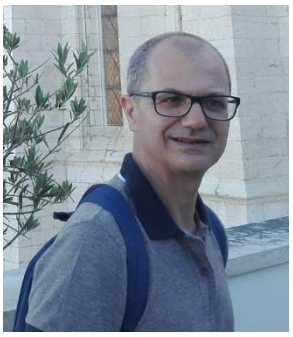
Curriculum Vitae
Giovanni Garcea



POSITION:
associate professor of Structural Mechanics

ADDRESS:
University of Calabria
Department of Computer Science, Modeling,
Electronics and Systems Engineering (DIMES),
Cubo 39 C,
87036 Rende(CS), Italy
email: giovanni.garcea@unical.it
Tel.: +39 0984 496903

Scopus Author id: 35610406000
March 2020 h index 23 citation 1234

EDUCATION:

- May 1991 Civil Engineering Degree, University of Calabria, 110/110 with honors;
- February 1995 Ph.D. in Computational Mechanics, University of Calabria

POSITION:

- On March 2017 received the national scientific qualification for full professor in the sector 08/B.
- On March 2012 received the national scientific qualification for full professor in the sector 08/B.
- March 2005-present: Associate Professor of Structural Mechanics at University of Calabria, Italy;
- Jenuary 2004 - March 2005: Assistant professor of Structural Mechanics at University of Calabria, Italy;

TEACHING ACTIVITIES:

- 2015 –present: Statics BS Civil Engineering, 6 ECTS
- 2010 –present: Nonlinear Analysis of Structures, MS in Civil Engineering, 6 ECTS
- 2008 –present: Nonlinear Structure Analysis, PhD School, 3 ECTS
- 2009-2014: Statics and Continuum Mechanics, BS Civil Engineering, 6 ECTS
- 2003-2010: Seismic Engineering, MS in Environmental Engineering, 6 ECTS
- 2004-2008: Strength of Materials II, BS Civil Engineering, 4 ECTS
- 2003-2010: Structural Instability, MS Civil Engineering, 6 ECTS

RESEARCH LABORATORY

- 2003-present: Scientific Supervisor of the Computational Mechanics Laboratory at the University of Calabria;

INTERNATIONAL JOURNAL REFEREE ACTIVITIES

Reviewer for several journals such as: International Journal for Numerical Methods in Engineering, Computer Methods Applied Mechanics, Computer and Structures, International Journal Solids and Structures, Composite Structures, Composites Part B, European Journal of Mechanics - A/Solids, Journal of Sound and Vibration, Engineering Structures, Thin Walled Structures, Meccanica, Computational Mechanics, Phisyca A, Nonlinear Dynamics, International Journal of Mechanical Science, Computational Materials Science, Journal of Vibration and Control, Acta Astronautica, Mechanics of Mathematical Problems in Engineering, Structural Engineering and Mechanics, Computer Modeling in Engineering Sciences, Mathematical Problems in Engineering, Mathematics Applied in Science and Technology.

CURRENT RESEARCH ACTIVITIES

Numerical methods for geometrically nonlinear analysis of structures based on arc-length and Koiter algorithms; geometrically exact structural models for beams, plates and shells; imperfection sensitivity analysis of structures characterized by coincident buckling loads; optimization of composite structures undergoing buckling; advanced beam models based on a generalized Saint Venant solution and including cross section distortions for linear and geometrically nonlinear analysis; solid-shell finite elements for composite structures undergoing large displacements; hybrid finite elements for material and geometrically nonlinear problems; isogeometric formulations for shells; numerical methods for material nonlinearities including direct methods for limit and shakedown analysis; accurate modeling of the structural response of reinforced concrete structures.

RESEARCH PROJECTS COORDINATOR

- PRIN 2004, Research Unit coordinator, Rischio sismico e vulnerabilità strutturale dei centri storici del mediterraneo orientale.
- PRIN 2004, Research Unit coordinator, Rischio sismico e vulnerabilità strutturale dei centri storici del mediterraneo orientale.
- 2014-2015 “PIA-Pacchetti integrati di agevolazione” POR CALABRIA;
- 2017 – present CARTIS- RELUIS, “Progetto per la caratterizzazione tipologico strutturale dei comparti urbani costituiti da edifici ordinari”, Research Unit coordinator.

RESEARCH PROJECTS PARTECIPATION (Selection)

- 1995-1999, Brite Euram APRICOS (EC BE95-1017) project, Advanced Primary Composite Structures, UE.
- PRIN 2015, Advanced mechanical modeling of new materials and structures for the solution of 2020 Horizon challenges
- PRIN 2010/2011, Modelli ed algoritmi per l’analisi non lineare delle strutture e la validazione di regole di progettazione a base prestazionale
- PRIN 2007, Sviluppo di modelli e strategie numeriche per l’analisi critica e postcritica di strutture elastiche snelle e per l’analisi in campo plastico di strutture soggette a processi di carico complessi
- PRIN 2003, Definizione di metodi integrati per la verifica strutturale di edifici in muratura

OTHER PROJECTS

- Seismic vulnerability of some buildings in the towns of S. Onofrio (VV), Spezzano Albanese (CS), Vaccarizzo (CS), Trebisacce (CS);
- Fatigue assessment of towers and antenna poles for SISEM, Rende (CS).

RESEARCH ACTIVITY FUNDING

• Basic research activities funding according to the Law 11 December 2016 no. 232 (FFABR): 12% of the

Italian associate professors selected in terms of their research activity;

EDITORIAL BOARD MEMBER OF CONFERENCES

- CISM 2020 - 8th International Conference on Coupled Instabilities in Metal Structures, Lodz 13-15 July 2020.
- Stability and ductility of steel structures colloquium, Prague 2019;
- ICoNSoM 2019 - International Conference on Nonlinear Solid Mechanics, Rome, 16-19 June 2019.
- The Eighth International Conference on Thin-Walled Structures, Lisbon, 2018;
- International Colloquium on Stability and Ductility of Steel Structures, Timisoara, 2016.
- XIX GIMC, Gruppo Italiano di Meccanica Computazionale, Rossano (Italy), 2012.

CONFERENCE MINI-SYMPOSIUM ORGANIZER

- ECCM-ECDF 2018, Glasgow. MS95: Strength, fatigue and stability of composite structures

CHAIRMAN OF THE FOLLOWING CONFERENCES

- VIII International Conference in Advances in Steel Structures - IJSSD, Lisbon,
- IV international Workshop on Direct Methods, Reggio Calabria, October 2013;
- The 6th International Conference on Coupled Instabilities in Metal Structures, Glasgow, 3 - 5 December 2012;
- XX Congresso AIMETA, Bologna, 2011

INSTITUTIONAL RESPONSIBILITIES (selection)

- 2019-present: Member of the directive council of the Italian Group of Computational Mechanics (GIMC)
- 2014 -present: Coordinator of the curriculum “Solidi, Fluidi e Elasticitá” PhD Course in “Scienze e Tecnologie fisiche, chimiche e dei materiali”, University of Calabria;
- 2015-2018: member of the directive council of the DIMES department at Unical;
- 2009-2013: member of the Scientific council of the BATS Library at Unical

SUPERVISION OF PhD STUDENTS AND POSTDOCTORAL FELLOWS

- 2003–present: 8 Postdocs/9 PhD Students, Univ. of Calabria, Italy

INTERNATIONAL JOURNAL EDITORIAL BOARD MEMBERSHIP

- 2018 –present: Applied Mathematical Modeling, Elsevier, ISSN: 0307-904X.
- 2016 –present: Advances in Civil Engineering, Hindawi, ISSN 1687, ISI
- 2014 –present: Mathematical problem in Engineering, Hindawi, ISSN: 1563-5147 (Online) DOI: 10.1155/2629 , ISI.
- 2014 – present Rakenteiden Mekaniikka, ISSN 0783-6104
- 2010 - 2011, di ISRN Mathematical Analysis, Hindawi

MEMBERSHIPS OF SCIENTIFIC SOCIETIES

- 2017- present: SISCo, Societá Italiana di Scienza delle Costruzioni

- 2014 - present: IADME, International Association on Direct Methods, with Dieter Weichert, Alan Ponter, Gery de Saxcè, Kostantinos Spiliopoulos, Joseph Pastor, Patrick de Buhan, Haofeng Chen, Paolo Fuschi.
- 2007-2014: Direct Methods group
- 1993-present: GIMC, Gruppo Italiano di Meccanica Computazionale
- 1992 -present AIMETA, Associazione Italiana di Meccanica Teorica ed Applicata

INVITED LECTURES AND COURSES

- 2019, Erasmus course on "Nonlinear analysis of slender structures", 8 hours, Universidade Nova de Lisboa, Lisbona (PT).
- 2016, Invited lecture at "Gery de Saxcè colloquim", Lille.
- 2016, CISM - Udine, Modelli, Metodi di calcolo e procedure di validazione nell'analisi non lineare delle strutture secondo gli Eurocodici. Two lectures : 1) "L'analisi non lineare nella verifica delle strutture:principi e metodi", 2) "Analisi limite di edifici in c.a..
- June 2015, Università degli Studi di Napoli Federico II, PhD course, two lectures: 1) A 3D beam model including the effects of section distortions; 2) Effective treatment of complex statical and dynamical load combinations within shakedown analysis of 3D frames.
- 2014, CISM - Udine, Modelli, Metodi di calcolo e procedure di validazione nell'analisi non lineare delle strutture secondo gli Eurocodici, Lecture on "Analisi limite e a shakedown di strutture intelaiate"
- June 2010, Lecture on plasticity in practical design to the "Ordine professionale degli Ingegneri", Cosenza.
- May 2009, Lectures on "Plasticity and Shakedown" and "Rational structural models for slender structures", PhD course, Potenza (Italy).

MAJOR COLLABORATIONS

- Universidade Nova de Lisboa, prof. Rodrigo Goncalves, generalized beam models
- Instituto Superior Tecnico- Universidade de Lisboa, prof. Dinar Camotim, generalized beam models
- University HUTECH, Vietnam, prof. Hung Nguyen Xuan, smoothed finite elements
- University of Glasgow, prof. Martin Ruess, efficient algorithms for the analysis of slender structures
- University of Pavia, research group prof. A.Reali, on isogeometric models for shell in large deformation problems.
- University of Limerick, (Ireland), research group of prof. Paul.Weaver, on postbuckling optimization of composites shell structures.
- University of Naples - Federico II, Prof. Luciano Rosati, nonlinear analysis of reinforced concrete buildings
- University of Naples - Federico II –prof. Zuccaro "Sviluppo di tecniche di modellazione ed analisi per la valutazione della vulnerabilità degli edifici, l'utilizzo di materiali innovativi e la riduzione del rischio nei riguardi di eventi eccezionali".

HIGLY CITED RESEARCH

1. 2019, The paper [13] is among the most cited ones from January 2017 to December 2018, International Journal for Numerical Methods.
2. 2017, The paper [23] is among the most cited one from January 2014 until April 2016, Computer and Structures.

PUBLICATION (Journal only)

1. D. Magisano, L. Leonetti, A. Madeo, and G. Garcea, “A large rotation finite element analysis of 3D beams by incremental rotation vector and exact strainmeasure with all the desirable features,” Computer Methods in Applied Mechanics and Engineering, vol. In Press, pp. –, 2020.
2. L. Leonetti, D. Magisano, A. Madeo, G. Garcea, J. Kiendl, and A. Reali, “A simplified Kirchhoff–Love large deformation model for elastic shells and its effective isogeometric formulation,” Computer Methods in Applied Mechanics and Engineering, vol. 354, pp. 369 – 396, 2019.
3. F. S. Liguori, G. Zucco, A. Madeo, D. Magisano, L. Leonetti, G. Garcea, and P. M.Weaver, “Postbuckling optimisation of a variable angle tow composite wingbox using a multi-modal Koiter approach,” Thin-Walled Structures, vol. 138, pp. 183 – 198, 2019.
4. D. Magisano, F. Liguori, L. Leonetti, D. de Gregorio, G. Zuccaro, and G. Garcea, “A quasi-static nonlinear analysis for assessing the fire resistance of reinforced concrete 3D frames exploiting time-dependent yield surfaces,” Computers and Structures, vol. 212, pp. 327 – 342, 2019.
5. A. Bilotta and G. Garcea, “A two-level computational approach for the elastoplastic analysis of framed structures with composite cross-sections,” Composite Structures, vol. 209, pp. 192 – 205, 2019.
6. D. Magisano, F. Liguori, L. Leonetti, and G. Garcea, “Minkowski plasticity in 3D frames: Decoupled construction of the cross-section yield surface and efficient stress update strategy,” International Journal for Numerical Methods in Engineering, vol. 116, no. 7, pp. 435–464, 2018.
7. L. Leonetti, D. Magisano, F. Liguori, and G. Garcea, “An isogeometric formulation of the Koiter’s theory for buckling and initial post-buckling analysis of composite shells,” Computer Methods in Applied Mechanics and Engineering, vol. 337, pp. 387 – 410, 2018.
8. F. S. Liguori, A. Madeo, D. Magisano, L. Leonetti, and G. Garcea, “Post-buckling optimisation strategy of imperfection sensitive composite shells using Koiter method and Monte Carlo simulation,” Composite Structures, vol. 192, pp. 654 – 670, 2018.
9. S. Sessa, F. Marmo, L. Rosati, L. Leonetti, G. Garcea, and R. Casciaro, “Evaluation of the capacity surfaces of reinforced concrete sections: Eurocode versus a plasticity based approach,” Meccanica, vol. 53, pp. 1493–1512, Apr 2018.
10. L. Leonetti, F. Liguori, D. Magisano, and G. Garcea, “An efficient isogeometric solidshell formulation for geometrically nonlinear analysis of elastic shells,” Computer Methods in Applied Mechanics and Engineering, vol. 331, pp. 159–183, 2018.
11. D. Magisano, K. Liang, G. Garcea, L. Leonetti, and M. Ruess, “An efficient mixed variational reduced-order model formulation for nonlinear analyses of elastic shells,” International Journal for Numerical Methods in Engineering, vol. 113, pp. 634–655, 2018.
12. G. Garcea, F. S. Liguori, L. Leonetti, D. Magisano, and A. Madeo, “Accurate and efficient a-posteriori account of geometrical imperfections in Koiter finite element analysis,” International Journal for Numerical Methods in Engineering, vol. 112, pp. 1154–1174, 2017.
13. G. Garcea, L. Leonetti, D. Magisano, R. Gonçalves, and D. Camotim, “Deformation modes for the post-critical analysis of thin-walled compressed members by a Koiter semi-analytic approach,” International Journal of Solids and Structures, vol. 110-111, pp. 367–384, 2017.
14. L. Leonetti, G. Garcea, and H. Nguyen-Xuan, “A mixed node-based smoothed finite element method (MNS-FEM) for elasticity,” Engineering with Computers, pp. 1–16, 2017.
15. D. Magisano, L. Leonetti, and G. Garcea, “How to improve efficiency and robustness of the Newton method in geometrically non-linear structural problem discretized via displacement-based finite elements,” Computer Methods in Applied Mechanics and Engineering, vol. 313, pp. 986–1005, 2017.
16. D. Magisano, L. Leonetti, and G. Garcea, “Koiter asymptotic analysis of multilayered composite structures using mixed solid-shell finite elements,” Composite Structures, vol. 154, pp. 296 – 308, 2016.
17. D. Magisano, L. Leonetti, and G. Garcea, “Advantages of the mixed format in geometrically nonlinear analysis of beams and shells using solid finite elements,” International Journal for Numerical Methods in Engineering, vol. 109, no. 9, pp. 1237–1262, 2017.
18. L. Leonetti, G. Garcea, and H. Nguyen-Xuan, “A mixed edge-based smoothed finite element method (MES-FEM) for elasticity,” Computers and Structures, vol. 173, pp. 123–138, 2016.

19. A. Bilotta, G. Garcea, and L. Leonetti, “A composite mixed finite element model for the elasto-plastic analysis of 3D structural problems,” Finite Elements in Analysis and Design, vol. 113, pp. 43–53, 2016.
20. G. Garcea, R. Gonçalves, A. Bilotta, D. Manta, R. Bebiano, L. Leonetti, D. Magisano, and D. Camotim, “Deformation modes of thin-walled members: A comparison between the method of Generalized Eigenvectors and Generalized Beam Theory,” Thin-Walled Structures, vol. 100, pp. 192–212, 2016.
21. L. Leonetti, R. Casciaro, and G. Garcea, “Effective treatment of complex statical and dynamical load combinations within shakedown analysis of 3d frames,” Computers and Structures, vol. 158, no. 0, pp. 124 – 139, 2015.
22. G. Garcea, A. Bilotta, A. Madeo, G. Zagari, and R. Casciaro, “A numerical asymptotic formulation in case for the post-buckling analysis of structures,” REVUE ROUMAINE DES SCIENCES TECHNIQUES. SERIE DE MECANIQUE APPLIQUEE, vol. 59, pp. 38–55, 2014.
23. A. Genoese, A. Genoese, A. Bilotta, and G. Garcea, “Buckling analysis through a generalized beam model including section distortions,” Thin-Walled Structures, vol. 85, pp. 125–141, 2014.
24. A. Genoese, A. Genoese, A. Bilotta, and G. Garcea, “A geometrically exact beam model with non-uniform warping coherently derived from the Saint Venant rod,” Eng. Struct., vol. 68, pp. 33–46, 2014.
25. A. Genoese, A. Genoese, A. Bilotta, and G. Garcea, “A composite beam model including variable warping effects derived from a generalized Saint Venant solution,” Composite Structures, vol. 110, no. 1, pp. 140–151, 2014.
26. A. Genoese, A. Genoese, A. Bilotta, and G. Garcea, “A generalized model for heterogeneous and anisotropic beams including section distortions,” Thin-Walled Structures, vol. 74, pp. 85–103, 2014.
27. A. Genoese, A. Genoese, A. Bilotta, and G. Garcea, “A mixed beam model with non-uniform warpings derived from the Saint Venant rod,” Computers and Structures, vol. 121, pp. 87–98, 2013.
28. G. Garcea, A. Madeo, and R. Casciaro, “The implicit corotational method and its use in the derivation of nonlinear structural models for beams and plates,” J. Mech. Mater. Struct., vol. 7, no. 6, pp. 509–539, 2012.
29. G. Garcea, A. Madeo, and R. Casciaro, “Nonlinear fem analysis for beams and plate assemblages based on the implicit corotational method,” J. Mech. Mater. Struct., vol. 7, no. 6, pp. 539–574, 2012.
30. A. Bilotta, L. Leonetti, and G. Garcea, “An algorithm for incremental elastoplastic analysis using equality constrained sequential quadratic programming,” Computers and Structures, vol. 102-103, pp. 97–107, 2012.
31. A. Bilotta, L. Leonetti, and G. Garcea, “Three field finite elements for the elastoplastic analysis of 2d continua,” Finite Elements in Analysis and Design, vol. 47, no. 10, pp. 1119–1130, 2011.
32. G. Garcea and L. Leonetti, “A unified mathematical programming formulation of strain driven and interior point algorithms for shakedown and limit analysis,” International Journal for Numerical Methods in Engineering, vol. 88, no. 11, pp. 1085–1111, 2011.
33. G. Garcea, A. Madeo, G. Zagari, and R. Casciaro, “Asymptotic post-buckling FEM analysis using corotational formulation,” International Journal of Solids and Structures, vol. 46, no. 2, pp. 377–397, 2009.
34. G. Garcea, G. Armentano, S. Petrolo, and R. Casciaro, “Finite element shakedown analysis of two-dimensional structures,” International Journal for Numerical Methods in Engineering, vol. 63, no. 8, pp. 1174–1202, 2005.
35. G. Garcea, G. Formica, and R. Casciaro, “A numerical analysis of infinitesimal mechanisms,” International Journal for Numerical Methods in Engineering, vol. 62, no. 8, pp. 979–1012, 2005.
36. R. Casciaro and G. Garcea, “An iterative method for shakedown analysis,” Computer Methods in Applied Mechanics and Engineering, vol. 191, no. 49-50, pp. 5761– 5792, 2002.
37. G. Garcea, “Mixed formulation in Koiter analysis of thin-walled beams,” Computer Methods in Applied Mechanics and Engineering, vol. 190, no. 26-27, pp. 3369– 3399, 2001.
38. G. Garcea, G. A. Trunfio, and R. Casciaro, “Path-following analysis of thin-walled structures and comparison with asymptotic post-critical solutions,” International Journal for Numerical Methods in Engineering, vol. 55, no. 1, pp. 73–100, 2002.

39. G. Garcea, G. Salerno, and R. Casciaro, “Extrapolation locking and its sanitization in Koiter’s asymptotic analysis,” Computer Methods in Applied Mechanics and Engineering, vol. 180, no. 1-2, pp. 137–167, 1999.
40. G. Garcea, G. Trunfio, and R. Casciaro, “Mixed formulation and locking in path-following nonlinear analysis,” Computer Methods in Applied Mechanics and Engineering, vol. 165, pp. 247–272, NOV 2 1998.
41. R. Casciaro, G. Garcea, G. Attanasio, and F. Giordano, “Perturbation approach to elastic post-buckling analysis,” Computers and Structures, vol. 66, no. 5, pp. 585– 595, 1998.
42. A. D. Lanzo and G. Garcea, “Koiter’s analysis of thin-walled structures by a finite element approach,” International Journal for Numerical Methods in Engineering, vol. 39, no. 17, pp. 3007–3031, 1996.
43. A. D. Lanzo, G. Garcea, and R. Casciaro, “Asymptotic post-buckling analysis of rectangular plates by hc finite elements,” International Journal for Numerical Methods in Engineering, vol. 38, no. 14, pp. 2325–2345, 1995.