

# CURRICULUM VITAE

## GIORGIO CARTA

Associate Professor

*Department of Mechanical,  
Chemical and Materials Engineering,  
University of Cagliari, Italy*



Name: Giorgio

Surname: Carta

Nationality: Italian

Date of birth: 23/09/1978

E-mail: [giorgio\\_carta@unica.it](mailto:giorgio_carta@unica.it)

Place of birth: Cagliari, Italy

Web: [https://www.unica.it/unica/page/it/giorgio\\_carta](https://www.unica.it/unica/page/it/giorgio_carta)

### EDUCATION

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- |            |  |
|------------|--|
| 21/09/2009 | ▪ MSc in Structural Engineering (distinction) – University of Sheffield, UK<br>Dissertation title: "Wave dispersion in heterogeneous materials"  |
| 09/03/2007 | ▪ PhD in Structural Engineering – University of Cagliari, Italy<br>Thesis title: "Work-hardening elastic-plastic materials. Determination of traction/torsion yield surfaces obtained with a deductive approach" |
| 20/10/2003 | ▪ Degree in Civil Engineering (110/110 e lode) – University of Cagliari, Italy<br>Dissertation title: "Rigid-plastic model for the seismic assessment of an elastic-plastic oscillator"                          |

### POSITIONS

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|----------------------------|---|
| 29/11/2022 –<br>TO DATE    | ▪ Associate Professor<br>Department of Mechanical, Chemical and Materials Engineering,<br>University of Cagliari, Italy   |
| 29/11/2019 –<br>28/11/2022 | ▪ Lecturer<br>Department of Mechanical, Chemical and Materials Engineering,<br>University of Cagliari, Italy  |
| 03/06/2019 -<br>31/07/2019 | ▪ Research Fellow<br>EPSRC project "Mathematical fundamentals of Metamaterials for<br>multiscale Physics and Mechanics"<br>Department of Mathematical Sciences, University of Liverpool, UK                           |
| 03/05/2016 -<br>02/05/2019 | ▪ Research Fellow<br>EPSRC project "Mathematical fundamentals of Metamaterials for<br>multiscale Physics and Mechanics"<br>Department of Maritime and Mechanical Engineering, Liverpool John<br>Moores University, UK |

- 01/06/2015 - 02/05/2016
  - Postdoc Research Associate  
Research project of the European Coal and Steel Community: "INDUCE-2-SAFETY - Component Fragility Evaluation and seismic safety assessment of chemical/petrochemical plants under design-basis and beyond-design-basis accident conditions"  
Department of Mathematical Sciences, University of Liverpool, UK
  
- 09/05/2013 - 08/05/2015
  - Postdoc Research Assistant  
Research project of RAS (Regione Autonoma della Sardegna) 2010: "Modellazione matematica nella meccanica dei materiali" ("Mathematical models in the mechanics of materials")  
Department of Mechanical, Chemical and Materials Engineering, University of Cagliari, Italy
  
- 03/09/2012 - 29/04/2013
  - Postdoc Research Assistant  
EPSRC project: "Asymptotic and numerical modelling of faults and thermal striping in materials with a micro-structure"  
School of Engineering, Liverpool John Moores University, UK
  
- 15/06/2012 - 14/08/2012
  - Research Assistant  
Research contract: "Studio del comportamento dispersivo dei materiali eterogenei" ("Study of the dispersive behaviour of heterogeneous materials")  
Department of Mechanical, Chemical and Materials Engineering, University of Cagliari, Italy
  
- 07/06/2010 - 06/06/2012
  - Postdoc Research Assistant  
Research project under the Master and Back Program 2010: "Propagazione delle onde elastiche nei materiali dispersivi" ("Propagation of elastic waves in dispersive materials")  
Department of Civil Engineering, University of Cagliari, Italy

## **PUBLICATIONS**

(Scopus Author ID: 37055324300; h-index: 17; no. citations: 786)  
(ORCID: 0000-0003-1325-8070)

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1. Baldi A., Santucci P.M., Carta G., Brun M., Marongiu G., Lai D., 2023, "On the Miura Ori Modal Response: A Look Throughout the Experimental Side", Conference Proceedings of the Society for Experimental Mechanics Series, pp. 37 – 42, 2023 SEM Annual Conference and Exposition on Experimental and Applied Mechanics, Pittsburgh, 2022
  2. Baldi A., Santucci P.M., Carta G., Brun M., Lai D., 2023, "The Miura Ori Geometry: From Brilliant Theory to Surprising Auxetic Properties", Conference Proceedings of the Society for Experimental Mechanics Series, pp. 55 – 59, 2023 SEM Annual Conference and Exposition on Experimental and Applied Mechanics, Pittsburgh, 2022
  3. Carta G., Nieves M.J., Brun M., 2022, "Unidirectional Interfacial Waves in Gyroscopic Elastic Systems", Mechanisms and Machine Science (2211-0984), Vol. 125, pp. 1135-1142, 10th International Conference on Wave Mechanics and Vibrations, WMVC 2022, Lisbon, 2022
  4. Haslinger S.G., Frecentese S., Carta G., 2022, "Localized waves in elastic plates with perturbed honeycomb arrays of constraints", Philosophical Transactions of the Royal Society A (1364-503X), Vol. 380(2231), article number: 20210404 (DOI:

- 10.1098/rsta.2021.0404)
5. Carta G., Nieves M.J., Pagneux V., Brun M., 2022, "Non-Reciprocal Behaviour of a Gyroscopic Elastic Continuum", 16th International Congress on Artificial Materials for Novel Wave Phenomena, *Metamaterials 2022* (978-166546584-7), pp. X095–X097 (DOI: 10.1109/Metamaterials54993.2022.9920816)
  6. Moradweysi P., Santucci P.M., Carta G., Goudarzi T., Aghdam M.M., Baldi A., Brun M., 2022, "Design and analysis of a thick Miura-ori folded structure with large negative Poisson's ratio", *Mechanics of Advanced Materials and Structures* (1537-6494) (DOI: 10.1080/15376494.2022.2126567)
  7. Carta G., Nieves M.J., Brun M., 2022, "Lamb waves in discrete homogeneous and heterogeneous systems: Dispersion properties, asymptotics and non-symmetric wave propagation", *European Journal of Mechanics A/Solids* (0997-7538) (DOI: 10.1016/j.euromechsol.2022.104695)
  8. Baldi A., Brun M., Carta G., 2022, "Three-dimensional auxetic porous medium", *Mechanics of Materials* (0167-6636), Vol. 164, article number: 104114 (DOI: 10.1016/j.mechmat.2021.104114)
  9. Morvaridi M., Carta G., Bosia F., Gliozzi A.S., Pugno N.M., Misseroni D., Brun M., 2021, "Hierarchical auxetic and isotropic porous medium with extremely negative Poisson's ratio", *Extreme Mechanics Letters* (2352-4316), Vol. 48, article number: 101405 (DOI: 10.1016/j.eml.2021.101405)
  10. Movchan A.B., McPhedran R.C., Carta G., 2011, "Scattering reduction and resonant trapping of flexural waves: Two rings to rule them", *Applied Sciences (Switzerland)* (2076-3417), Vol. 11(10), article number: 4462 (DOI: 10.3390/app11104462)
  11. Carta G., Nieves M.J., 2021, "Analytical treatment of the transient motion of inertial beams attached to coupling inertial resonators", *Journal of Engineering Mathematics* (0022-0833), Vol. 127(1), article number: 20 (DOI: 10.1007/s10665-021-10110-w)
  12. Nieves M.J., Carta G., Pagneux V., Brun M., 2021, "Directional control of Rayleigh wave propagation in an elastic lattice by Gyroscopic effects", *Frontiers in Materials* (2296-8016), Vol. 7, article number: 602960 (DOI: 10.3389/fmats.2020.602960)
  13. Nieves M.J., Carta G., Pagneux V., Brun M., 2020, "Rayleigh waves in micro-structured elastic systems: Non-reciprocity and energy symmetry breaking", *International Journal of Engineering Science* (0020-7225), Vol. 156, article number: 103365 (DOI: 10.1016/j.ijengsci.2020.103365)
  14. Carta G., Colquitt D.J., Movchan A.B., Movchan N.V., Jones I.S., 2020, "Chiral flexural waves in structured plates: Directional localisation and control", *Journal of the Mechanics and Physics of Solids* (0022-5096), Vol. 137, article number: 103866 (DOI: 10.1016/j.jmps.2020.103866)
  15. Carta G., Colquitt D.J., Movchan A.B., Movchan N.V., Jones I.S., 2020, "One-way interfacial waves in a flexural plate with chiral double resonators", *Philosophical Transactions of the Royal Society A* (1364-503X), Vol. 378(2162), article number: 20190350 (DOI: 10.6084/m9.figshare.c.4698296)
  16. Carta G., Jones I.S., Movchan N.V., Movchan A.B., 2019, "Wave polarisation in a dynamic elastic lattice", *AIP Conference Proceedings* (0094-243X), Vol. 2186, article number: 040003 (DOI: 10.1063/1.5137932)
  17. Carta G., Jones I.S., Movchan N.V., Movchan A.B., 2019, "Wave polarization and dynamic degeneracy in a chiral elastic lattice", *Proceedings of the Royal Society of London A* (1364-5021), Vol.

- 475(2232), article number: 313 (DOI: 10.1098/rspa.2019.0313)
18. Carta G., Nieves M.J., Jones I.S., Movchan N.V., Movchan A.B., 2019, "Flexural vibration systems with gyroscopic spinners", *Philosophical Transactions of the Royal Society A (1364-503X)*, Vol. 377(2156), article number: 20190154 (DOI: 10.1098/rsta.2019.0154)
  19. Garau M., Nieves M.J., Carta G., Brun M., 2019, "Transient response of a gyro-elastic structured medium: Unidirectional waveforms and cloaking", *International Journal of Engineering Science (0020-7225)*, Vol. 143, pp. 115-141 (DOI: 10.1016/j.ijengsci.2019.05.007)
  20. Garau M., Nieves M.J., Carta G., Brun M., 2019, "A gyro-elastic device for cloaking of elastic waves in micro-structured materials", 13th International Congress on Artificial Materials for Novel Wave Phenomena, *METAMATERIALS 2019 (978-172810477-5)* (DOI: 10.1109/MetaMaterials.2019.8900841)
  21. Carta G., Jones I.S., Movchan N.V., Movchan A.B., 2019, "Wave characterisation in a dynamic elastic lattice: Lattice flux and circulation", *Physical Mesomechanics (1029-9599)*, Vol. 22(2), pp. 152-163 (DOI: 10.1134/S102995991902005X)
  22. Movchan A.B., McPhedran R.C., Carta G., Craster R.V., 2019, "Platonic localisation: one ring to bind them", *Archive of Applied Mechanics (0939-1533)*, Vol. 89(3), pp. 521-533 (DOI: 10.1007/s00419-018-1465-8)
  23. Morvaridi M., Carta G., Brun M., 2018, "Platonic crystal with low-frequency locally-resonant spiral structures: wave trapping, transmission amplification, shielding and edge waves", *Journal of the Mechanics and Physics of Solids (0022-5096)*, Vol. 121, pp. 496-516 (DOI: 10.1016/j.jmps.2018.08.017)
  24. Carta G., Nieves M.J., Jones I.S., Movchan N.V., Movchan A.B., 2018, "Physical model of a chiral flexural waveguide", 12th International Congress on Artificial Materials for Novel Wave Phenomena, *METAMATERIALS 2018 (978-153864702-8)* (DOI: 10.1109/MetaMaterials.2018.8534157)
  25. Nieves M.J., Garau M., Carta G., Jones I.S., Movchan N.V., Movchan A.B., 2018, "Design of a chiral elastic structure supporting interfacial waveforms", 12th International Congress on Artificial Materials for Novel Wave Phenomena, *METAMATERIALS 2018 (978-153864702-8)* (DOI: 10.1109/MetaMaterials.2018.8534138)
  26. Nieves M.J., Carta G., Jones I.S., Movchan A.B., Movchan N.V., 2018, "Vibrations and elastic waves in chiral multi-structures", *Journal of the Mechanics and Physics of Solids (0022-5096)*, Vol. 121, pp. 387-408 (DOI: 10.1016/j.jmps.2018.07.020)
  27. Garau M., Carta G., Nieves M.J., Jones I.S., Movchan N.V., Movchan A.B., 2018, "Interfacial waveforms in chiral lattices with gyroscopic spinners", *Proceedings of the Royal Society of London A (1364-5021)*, Vol. 474, article number: 20180132 (DOI: 10.1098/rspa.2018.0132)
  28. Carta G., Nieves M.J., Jones I.S., Movchan N.V., Movchan A.B., 2018, "Elastic chiral waveguides with gyro-hinges", *Quarterly Journal of Mechanics and Applied Mathematics (1464-3855)*, Vol. 71(2), pp. 157-185 (DOI: 10.1093/qjmam/hby001)
  29. Frecentese S., Argani L.P., Movchan A.B., Movchan N.V., Carta G., Wall M.L., 2017, "Waves and fluid-solid interaction in stented blood vessels", *Proceedings of the Royal Society of London A (1364-5021)*, Vol. 474, article number: 0670 (DOI: 10.1098/rspa.2017.0670)
  30. Carta G., Jones I.S., Movchan N.V., Movchan A.B., Nieves M.J., 2017, "Gyro-elastic beams for the vibration reduction of long flexural systems", *Proceedings of the Royal Society of London A (1364-5021)*, Vol. 473, article number: 0136 (DOI: 10.1098/rspa.2017.0136)

31. La Salandra V., Wenzel M., Bursi O.S., Carta G., Movchan A.B., 2017, "Conception of a 3D metamaterial-based foundation for static and seismic protection of fuel-storage tanks", *Frontiers in Materials* (2095-0268), Vol. 4, article number: 30 (DOI: 10.3389/fmats.2017.00030)
32. Carta G., Jones I.S., Movchan N.V., Movchan A.B. and Nieves M.J., "'Deflecting elastic prism' and unidirectional localisation for waves in chiral elastic systems", *Scientific Reports* (2045-2322), Vol. 7, article number: 26, 2017 (DOI: 10.1038/s41598-017-00054-6)
33. Carta G., Giaccu G.F. and Brun M., "A phononic band gap model for long bridges. The 'Brabau' bridge case.", *Engineering Structures* (0141-0296), Vol. 140, pp. 66-76, 2017 (DOI: 10.1016/j.engstruct.2017.01.064)
34. Carta G., Movchan A.B., Argani L.P. and Bursi O.S., "Quasi-periodicity and multi-scale resonators for the reduction of seismic vibrations in fluid-solid systems", *International Journal of Engineering Science* (0020-7225), Vol. 109, pp. 216-239, 2016 (DOI: 10.1016/j.ijengsci.2016.09.010)
35. Carta G., Brun M. and Baldi A., "Design of a porous material with isotropic negative Poisson's ratio", *Mechanics of Materials* (0167-6636), Vol. 97, pp. 67-75, 2016 (DOI: 10.1016/j.mechmat.2016.02.012)
36. Carta G., Cabras L. and Brun M., "Continuous and discrete microstructured materials with null Poisson's ratio", *Journal of the European Ceramic Society* (0955-2219), Vol. 36, pp. 2183-2192, 2016 (DOI: 10.1016/j.jeurceramsoc.2016.01.003)
37. Carta G., Brun M., Movchan A.B. and Boiko T., "Transmission and localisation in ordered and randomly perturbed structured flexural systems", *International Journal of Engineering Science* (0020-7225), Vol. 98, pp. 126-152, 2016 (DOI: 10.1016/j.ijengsci.2015.09.005)
38. Carta G. and Brun M., "Bloch-Floquet waves in flexural systems with continuous and discrete elements", *Mechanics of Materials* (0167-6636), Vol. 87, pp. 11-26, 2015 (DOI: 10.1016/j.mechmat.2015.03.004)
39. Carta G., Brun M. and Movchan A.B., "Dynamic response and localisation in strongly damaged waveguides", *Proceedings of the Royal Society A* (1471-2946), Vol. 470, 20140136, 2014 (DOI: 10.1098/rspa.2014.0136)
40. Stochino F. and Carta G., "SDOF models for reinforced concrete beams under impulsive loads accounting for strain rate effects", *Nuclear Engineering and Design* (0029-5493), Vol. 276, pp. 74-86, 2014 (DOI: 10.1016/j.nucengdes.2014.05.022)
41. Carta G., Brun M., Movchan A.B., Movchan N.V. and Jones I.S., "Dispersion properties of vortex-type monatomic lattices", *International Journal of Solids and Structures* (0020-7683), Vol. 51, pp. 2213-2225, 2014 (DOI: 10.1016/j.ijsolstr.2014.02.026)
42. Carta G., Brun M., Movchan A.B., 2014, "Elastic wave propagation and stop-band generation in strongly damaged solids", *Fracture and Structural Integrity* (1971-8993), Vol. 29, pp. 28-36 (DOI: 10.3221/IGF-ESIS.29.04)
43. Carta G., Jones I.S., Brun M., Movchan N.V. and Movchan A.B., "Crack propagation induced by thermal shocks in structured media", *International Journal of Solids and Structures* (0020-7683), Vol. 50, pp. 2725-2736, 2013 (DOI: 10.1016/j.ijsolstr.2013.05.001)
44. Carta G. and Stochino F., "Theoretical models to predict the flexural failure of reinforced concrete beams under blast loads", *Engineering structures* (0141-0296), Vol. 49, pp. 306-315, 2012 (DOI: 10.1016/j.engstruct.2012.11.008)

45. Carta G., "Effects of compressive load and support damping on the propagation of flexural waves in beams resting on elastic foundation", *Archive of Applied Mechanics* (1432-0681), Vol. 82, pp. 1219-1232, 2012 (DOI: 10.1007/s00419-012-0611-y)
46. Carta G., "Correction to Bishop's approximate method for the propagation of longitudinal waves in bars of generic cross-section", *European Journal of Mechanics A/Solids* (0997-7538), Vol. 36, pp. 156-162, 2012 (DOI: 10.1016/j.euromechsol.2012.03.005)
47. Carta G. and Brun M., "A dispersive homogenization model based on lattice approximation for the prediction of wave motion in laminates", *Journal of Applied Mechanics, Trans. ASME* (0021-8936), Vol. 79, 021019, 2012 (DOI: 10.1115/1.4005579)
48. Carta G., Bennett T. and Askes H., "Determination of dynamic gradient elasticity length scales", *Proceedings of the ICE – Engineering and Computational Mechanics* (1755-0777), Vol. 165, pp. 41-47, 2012 (DOI: 10.1680/eacm.2012.165.1.41)
49. Porcu M.C. and Carta G., "A Better Rigid-plastic Estimate For Earthquake-induced Plastic Displacements", *International Journal of Safety and Security Engineering* (2041-9031), Vol. 2, pp. 184-196, 2012
50. Porcu M.C., Carta G., 2011, "Evaluating a rigid-plastic method to estimate the earthquake ductility demand on structures", *WIT Transactions on the Built Environment* (1743-3509), Vol. 120, pp. 261-271 (DOI: 10.2495/ERES110221)
51. Carta G., "Prestress-induced dispersion-like effects on wave propagation in elastic compressible materials", *Acta Mechanica* (0001-5970), Vol. 220, pp. 209-215, 2011 (DOI: 10.1007/s00707-011-0481-3)
52. Paglietti A. and Carta G., "Remarks on the current theory of shear strength of variable depth beams", *The Open Civil Engineering Journal* (2164-3164), Vol. 3, pp. 28-33, 2009 (DOI: 10.2174/1874149500903010028)

## TEACHING ACTIVITY

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2022 – TO DATE	▪ Lecturer of the course "Scienza delle Costruzioni" ("Mechanics of Solids and Structures") Mechanical Engineering Degree, University of Cagliari, Italy
2024 – TO DATE	▪ Lecturer of the course "Progetto Meccanico" ("Mechanical Design") Mechanical Engineering Degree, University of Cagliari, Italy
2021 – 2022	▪ Lecturer of the course "Fondamenti di Costruzioni Meccaniche" ("Fundamentals of Mechanical Structures") Mechanical Engineering Degree, University of Cagliari, Italy
2021	▪ Lecturer of the PhD course "Introduction to the Mechanics of Elastic Metamaterials" University of Cagliari, Italy
2018	▪ Lecturer of the PhD course "Metamaterials and seismic risk analysis for structural and mechanical systems" University of Trento, Italy
2013 - 2014 2012 - 2013	▪ Lecturer of the course "Complementi di Scienza delle Costruzioni 2" ("Advanced Structural Engineering 2") Civil Engineering Degree, University of Cagliari, Italy
2010 - 2011	▪ Lecturer of the course "Sicurezza e Affidabilità delle Costruzioni 2" ("Safety and Reliability of Structures 2") Civil Engineering Degree, University of Cagliari, Italy

- 2014 - 2015      ▪ Teaching assistant for the course "Scienza delle Costruzioni" ("Mechanics of Structures and Solids"), held by Prof. Michele Brun Environmental Engineering Degree, University of Cagliari, Italy
- 2005 - 2006      ▪ Teaching assistant for the course "Scienza delle Costruzioni" ("Mechanics of Structures and Solids"), held by Prof. Andrea Paglietti
- 2006 - 2007      Civil Engineering Degree, University of Cagliari, Italy
- 2007 - 2008

## **SCIENTIFIC ACTIVITY**

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- Conference participations:
- a. "Metamaterials 2022 - The 16th International Congress on Artificial Materials for Novel Wave Phenomena" (Siena, Italy, 12/09/2022 - 15/09/2022)
  - b. "10th International Conference on Wave Mechanics and Vibrations (WMVC 2022)" (Lisbon, Portugal, 04/07/2022 - 06/07/2022); organiser of the mini-symposium "Wave Mechanics for Structural Interfaces"
  - c. "25th International Congress of Theoretical and Applied Mechanics (ICTAM2020+1)" (Milan, Italy, 22/08/2021 - 27/08/2021)
  - d. "The Mathematics of Metamaterials" (Liverpool, UK, 10/05/2019)
  - e. "ICCMSE 2019" (Rhodes, Greece, 01/05/19 - 05/05/2019)
  - f. "Metamaterials 2018" (Espoo, Finland, 27/08/18 - 30/08/2018)
  - g. "10th European Solid Mechanics Conference" (Bologna, Italy, 02/07/18 - 06/07/2018)
  - h. "Elasticity day" (Manchester University, UK, 12/05/18)
  - i. British Applied Mathematics Colloquium (St Andrews, UK, 26/03/18 - 29/03/18)
  - j. "Metamaterials 2017" (Marseille, France, 28/08/17 - 01/09/17)
  - k. "CERMODEL 2017: Modelling and simulation meet innovation in ceramics technology" (Trento, Italy, 26/07/17 - 28/07/17)
  - l. "Imperial Waves Day" (Imperial College, London, UK, 15/06/17)
  - m. "Third Workshop on Seismic Metamaterials" (Bologna, Italy, 15/05/17 - 16/05/17)
  - n. British Applied Mathematics Colloquium (University of Surrey, UK, 10-12/04/2017)
  - o. "Metamaterials beyond photonics" meeting (Edinburgh, UK, 20-24/06/2016)
  - p. "Elasticity day" meeting (Brunel University, UK, 11/06/2016)
  - q. British Applied Mathematics Colloquium (Oxford, UK, 05-08/04/2016)
  - r. "Elasticity day" meeting (Keele, UK, 13/06/2015)
  - s. VIII GDRE conference "Research on Ultrasound Propagation for NDT" (Newtown, Pays de Galles, UK, 23-27/06/2014)
  - t. XX Convegno Nazionale di Meccanica Computazionale - VII Riunione del Gruppo Materiali AIMETA (GIMC-GMA) (Cassino, Italy, 11-13/06/2014)
  - u. XXI Congresso AIMETA (Torino, Italy, 17-20/09/2013)
  - v. XV International Symposium on Interaction of the Effects of Munitions with Structures (Potsdam, Germany, 16-20/09/2013)
  - w. CERMODEL 2013: Modelling and simulation meet innovation in ceramics technology (Trento, Italy, 10-12/07/2013)
  - x. XX Congresso AIMETA (Bologna, Italy, 12-15/09/2011)
  - y. VIII International Conference on Earthquake Resistant Engineering Structures (Chianciano Terme, Italy, 07-09/09/2011)
  - z. XVIII Congresso AIMETA (Brescia, Italy, 11-14/09/2007)
  - aa. XVII Congresso AIMETA (Firenze, Italy, 11-15/09/2005)
- Seminars:
- Invited speaker at the Department of Applied Science and Technology

of Politecnico di Torino, Italy, with the talk "Wave propagation in discrete elastic systems: dispersion, filtering and preferential directionality" (Torino, Italy, 05/12/2022)

- Invited speaker at the Department of Mathematics of the Imperial College, UK, with the talk "Gyro-elastic beams for the vibration reduction of long flexural systems" (London, UK, 28/02/2017)
- Invited speaker at the Department of Mathematics of the Imperial College, UK, with the talk "Directional control and localisation of waves in chiral elastic systems" (London, UK, 02/11/2016)
- Invited speaker at the Department of Civil, Environmental and Mechanical Engineering of the University of Trento, Italy, with the talk "Localisation phenomena and energy transmission in discrete flexural systems with random parameters" (Trento, Italy, 02/10/2015)

#### Grants:

- Participant in the unit of Cagliari for the Fondazione di Sardegna research project "Advanced design of THERmodinamically-stable Nanocrystalline Alloys (ATHENA)"; principal investigator: Prof. Roberto Orrù (University of Cagliari)
- Participant in the unit of the University of Liverpool for the EPSRC funded research project "Mathematical fundamentals of Metamaterials for multiscale Physics and Mechanics"; unit supervisor: Prof. Alexander B. Movchan, principal investigator: Prof. Richard Craster (Imperial College)
- Participant in the unit of Liverpool John Moores University for the EPSRC funded research project "Mathematical fundamentals of Metamaterials for multiscale Physics and Mechanics"; unit supervisor: Prof. Ian S. Jones, principal investigator: Prof. Richard Craster (Imperial College)
- Participant in the unit of the University of Liverpool for the research project of the European Coal and Steel Community: "INDUCE-2-SAFETY - Component Fragility Evaluation and seismic safety assessment of chemical/petrochemical plants under design-basis and beyond-design-basis accident conditions"; unit supervisor: Prof. Alexander B. Movchan, principal investigator: Prof. Oreste S. Bursi (University of Trento)
- Participant in the unit of the University of Cagliari for the research project of RAS (Regione Autonoma della Sardegna) 2010: "Modellazione matematica nella meccanica dei materiali" ("Mathematical models in the mechanics of materials"); unit supervisor: Prof. Michele Brun, principal investigator: Prof. Roberto Paroni (University of Sassari)
- Participant in the unit of Liverpool John Moores University for the EPSRC project: "Asymptotic and numerical modelling of faults and thermal striping in materials with a micro-structure"; unit supervisor: Prof. Ian S. Jones, principal investigator: Prof. Alexander B. Movchan (University of Liverpool)
- Principal investigator of the research project under the Master and Back Program 2010: "Propagazione delle onde elastiche nei materiali dispersivi" ("Propagation of elastic waves in dispersive materials")

#### Visiting Professor:

- Invitation from Prof. V. Pagneux at the University of Le Mans, France (01/02/2023-08/02/2023)

## **RESEARCH INTERESTS**

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Mechanical metamaterials, micro-structured media, auxetic materials, elastic waves, dispersion analysis, random systems, fracture mechanics, seismic design, fluid-solid interaction, plasticity, thermodynamics, mechanics of structures and solids, structural engineering, numerical methods.

## **NATIONAL SCIENTIFIC HABILITATION**

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01/12/2023 - 01/12/2034      ▪ National Scientific Habilitation for Full Professor  
08/B2 - "Scienza delle Costruzioni"

## **ENGLISH LANGUAGE CERTIFICATIONS**

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14/07/2007      ▪ TOEFL (Test Of English as a Foreign Language), 102/120  
04/2006      ▪ Certification of English language knowledge, level C1/2 (according to the  
Common European Framework of Reference)

## **OTHER QUALIFICATIONS**

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12/2003      ▪ Licence as a Civil Engineer

Cagliari, 2 February 2025

Prof. Giorgio Carta

