

PERSONAL INFORMATION

Matteo Pellicciari



 Castelvetro di Modena (MO), Italy

 matteo.pellicciari@unimore.it

Date of birth April 27, 1992 | Nationality Italian

EDUCATION

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|-------------------------|---|
| 01/03/2018 – 29/12/2021 | Ph.D. in Structural Engineering (Double Doctoral Degree)
Fuzhou University (China), in collaboration with the University of Modena and Reggio Emilia |
| 01/11/2017 – 18/05/2021 | Ph.D. in Industrial and Environmental Engineering (with honors)
University of Modena and Reggio Emilia, Department of Engineering “Enzo Ferrari” (DIEF) |
| 01/11/2014 – 12/04/2017 | Master’s Degree in Civil Engineering (110/110 cum laude; average grade: 30/30)
University of Modena and Reggio Emilia, DIEF |
| 01/11/2011 – 29/10/2014 | Bachelor’s Degree in Civil and Environmental Engineering (110/110 cum laude; average grade: 29.16/30)
University of Modena and Reggio Emilia, DIEF |

ACADEMIC APPOINTMENTS

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| Since 01/05/2026 | Tenure-track Researcher (RTT) at DIEF |
| 01/03/2024 – 30/04/2026 | Fixed-term Researcher (Type A) at DIEF
<i>Research topics:</i> polymer-matrix nanocomposites under large deformations; molecular and multiscale mechanics; experimental mechanics; finite element analysis; hysteresis of structural elements |
| 16/05/2022 – 29/02/2024 | Research Fellow at DIEF
<i>Project:</i> Analytical modeling in nonlinear elasticity of graphene microstructures for the development of “green” composite materials for civil engineering |
| 01/04/2021 – 31/03/2022 | Research Fellow at DIEF
<i>Project:</i> Graphene modeling in finite elasticity using molecular mechanics |

TEACHING EXPERIENCE

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| 2024 – 2026 | Course Instructor for Structural Mechanics and the Structural Mechanics Laboratory, Professional Degree Course in Construction and Land Management, DIEF |
| 2023 | Course Instructor for Structural Mechanics, Degree Program in Strategic Sciences, Military Academy of Modena |
| 2023 | Teaching Assistant for the Structural Mechanics course, Professional Degree Course in Construction and Land Management, DIEF |
| 2019 – 2022 | Teaching Assistant for the Structural Mechanics course, Bachelor’s Degree Program in Civil and Environmental Engineering, DIEF |
| Since 2018 | Student tutoring and office hours for the Structural Mechanics course, Bachelor’s Degree Program in Civil and Environmental Engineering, DIEF |
| Since 2018 | Supervision of six bachelor’s and seven master’s students during their thesis work at DIEF |
| 2021 – 2023 | Supervision of one Ph.D. student at DIEF |
| Since 2024 | Academic tutor for curricular internships undertaken by several bachelor’s students at DIEF |

RESEARCH GRANTS

- 2026 **Principal Investigator (PI) of the FIS Starting Grant project** “Polymer Nanocomposites: A New Generation of Sustainable Construction Materials”, funded by the Italian Ministry of University and Research (*amount*: EUR 1,321,802.69; *duration*: 3 years; *start date*: February 2026)
- 2024 **PI of a 2024–2025 Departmental FAR Project** funded by the University of Modena and Reggio Emilia, DIF (amount: EUR 12,876.10; duration: 15 months)

RESEARCH ACTIVITIES AND COLLABORATIONS

- Since 01/11/2023 Collaboration with Prof. V. Salomoni (University of Padua) within the PRIN 2022 project “New challenges of thin-walled structures at large strains and their promising applications”
- Since 16/05/2022 Member of the PRIN 2020 project “Opportunities and challenges of nanotechnology in advanced and green construction materials,” coordinated by Prof. L. Feo (University of Salerno)
- Since 01/03/2018 International collaboration with the Sustainable and Innovative Bridge Engineering Research Center (SIBERC) at Fuzhou University, involving Professors C. Nuti (Roma Tre University), G. C. Marano (Polytechnic University of Turin), and B. Briseghella (Fuzhou University)
- 01/02/2021 – 31/07/2022 Member of the GNFM 2020 Young Researchers Project “Equilibrium of solids under uniaxial tension and bending: buckling–snap-through interaction,” funded by the National Group of Mathematical Physics (GNFM), in collaboration with Dr. F. O. Falope
- 01/04/2021 – 31/03/2022 International collaboration with Prof. R. Tomasi (Norwegian University of Life Sciences) and Dr. A. Aloisio (University of L'Aquila) on the e-SAFE project (Energy and Seismic AFFordable rEnovation solutions), within the European Union's Horizon 2020 program

INTERNATIONAL EXPERIENCE

- 27/02/2019 – 31/07/2019 **Research stay at Fuzhou University** (China), College of Civil Engineering
Research topics: nonlinear molecular mechanics for graphene modeling; development of a hysteresis model for masonry-infilled reinforced-concrete frame structures
- 03/09/2018 – 21/12/2018 **Research stay at Fuzhou University** (China), College of Civil Engineering
Research topics: analytical modeling of the von Mises truss in finite elasticity; development of a Bouc-Wen model for structural elements with damage and pinching
- 14/09/2016 – 24/02/2017 **Study period at Fuzhou University** (China), College of Civil Engineering
Topic: numerical modeling of the hysteretic behavior of reinforced-concrete bridge piers

EDITORIAL ACTIVITIES

- 19/10/2023 – 28/06/2024 **Guest Editor** for the journal “Applied Sciences” (IF 2.5)
Special Issue title: Stress Analysis of Innovative Construction Materials
- 15/10/2022 – 15/05/2023 **Guest Editor** for the journal “Frontiers in Built Environment” (IF 2.7)
Special Issue title: Advances in Modeling of Novel Materials for Civil Engineering Applications
- Since 2019 **Reviewer** for the following international journals: Acta Mechanica, International Journal of Mechanical Sciences, International Journal of Engineering Science, Mechanics of Materials, Polymer, Computers and Structures, Engineering Structures, Composite Structures, International Journal of Non-Linear Mechanics, Thin-Walled Structures, Nonlinear Dynamics, Construction and Building Materials, International Journal of Structural Stability and Dynamics, International Journal of Applied Mechanics, Structural Engineering and Mechanics, Advances in Materials and Processing Technologies, Materials, Acta Astronautica, Heliyon, Data in Brief, Composites Part A

AWARDS AND HONORS

- 06/06/2023 **Italian National Scientific Qualification** for the position of Associate Professor (academic field CEAR-06/A – Structural Mechanics)
- 2023 **Best Young Researcher Award**, 3rd International Conference on Computations for Science and Engineering, Pegaso University, Naples

- 2023 **Best Ph.D. Dissertation Award** in the International Ph.D. Program in Industrial and Environmental Engineering, University of Modena and Reggio Emilia
- 2018 Recipient of funding under the International Mobility Actions for Young Researchers call, University of Modena and Reggio Emilia. *Amount awarded*: EUR 4,000
- 2017 Recipient of funding under the International Mobility Actions for Young Researchers call, University of Modena and Reggio Emilia. *Amount awarded*: EUR 2,600
- 2017 Winner of the fifth edition of the “**Gianni Bignardi**” **Graduation Award**, University of Modena and Reggio Emilia, in collaboration with the Order of Engineers of the Province of Modena
- 2017 UNIMORE Award for Outstanding Graduates (Master’s Degree)
- 2015 UNIMORE Award for Outstanding Graduates (Bachelor’s Degree)
- 2013, 2014, 2016 UNIMORE Award for Outstanding Students

SKILLS

Mother tongue Italian

Other languages	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken interaction	Spoken production	
English	C1	C1	C1	C1	C1
Chinese	HSK 4 (B2)	HSK 4 (B2)	HSK 4 (B2)	HSK 4 (B2)	HSK 4 (B2)

Technical and Computer Skills

- Advanced proficiency in the symbolic computation systems *Wolfram Mathematica* and *Maxima*
- Advanced ability to write *MATLAB* code for numerical simulations
- Expertise in finite element software, including *SAP2000*, *Straus7*, *OpenSees*, and *COMSOL Multiphysics*
- Proficiency in Microsoft Office (*Word*, *Excel*, and *PowerPoint*) and the *LaTeX* typesetting system
- Technical drawing skills using *AutoCAD*, *SOLIDWORKS*, and *Blender*
- Experience using scanning electron microscopy (SEM)

NATIONAL AND INTERNATIONAL CONFERENCES

- 04/07/2022 – 08/07/2022 **Session Chair** at the 11th European Solid Mechanics Conference (ESMC 2022), Galway, Ireland, Mini-Symposium 3-7, “Nonlinear Elasticity”
- 27/05/2026 – 29/05/2026 Presenter at the 20th European Mechanics of Materials Conference (EMMC20), Florence. *Title*: Rubber elasticity from a micromechanical model of polymer chains
- 02/09/2024 – 06/09/2024 Presenter at the ANIDIS 2025 Conference (Italian National Association for Earthquake Engineering), Assisi. *Title*: A novel slip-friction connector for seismic applications in timber structures: analytical and experimental investigation
- 02/09/2024 – 06/09/2024 Presenter at the XXVI AIMETA Congress (Italian Association of Theoretical and Applied Mechanics), Naples. *Title*: Bridging Scales in Graphene Modeling: From Molecular Mechanics to Continuum Theories
- 29/05/2024 – 31/05/2024 Presenter at the 19th European Mechanics of Materials Conference (EMMC19), Madrid. *Title*: Understanding Graphene Mechanics: From Molecular to Continuum Modeling
- 20/09/2023 – 23/09/2023 Presenter at the 3rd International Conference on Computations for Science and Engineering (ICCSE3), Naples. *Title*: Nanomechanics of graphene under large elastic deformations
- 04/09/2022 – 08/09/2022 Presenter at the XXV AIMETA Congress, Palermo. *Title*: A continuum model for graphene in nonlinear elasticity and its green applications
- 04/07/2022 – 08/07/2022 Presenter at the 11th European Solid Mechanics Conference (ESMC2022), Galway, Ireland. *Title*: Analytical and experimental study of snap-through instability in truss structures

- 24/09/2021 – 26/09/2021 Presenter at the 10th International Conference on Engineering and Innovative Materials (ICEIM2021), virtual conference. *Title: Nonlinear interaction between snap-through and Eulerian buckling in a two-bar truss*
- 21/09/2021 – 24/09/2021 Presenter at the 7th International Conference on Crack Paths (CP2021), virtual conference. *Title: Snap-through and Eulerian buckling of the von Mises truss*
- 28/06/2021 – 30/06/2021 Presenter at the 8th International Conference on Computational Methods in Structural Dynamics and Earthquake Engineering (COMPDYN 2021), Athens, Greece. *Title: A degrading Bouc-Wen data-driven model for the cyclic behavior of masonry infilled RC frames*
- 26/04/2021 – 28/04/2021 Presenter at the Engineered Materials for Sustainable Structures Conference (EM4SS'2021), Modena. *Title: Snap-through of a bi-stable truss in finite elasticity*
- 15/09/2019 – 19/09/2019 Presenter at the XXIV AIMETA Congress (Italian Association of Theoretical and Applied Mechanics), Rome. *Title: Equilibrium of the von Mises Truss in Nonlinear Elasticity*

PUBLICATIONS

Research indicators (Scopus): 34 articles in international journals, 6 contributions to peer-reviewed conference proceedings, 1 book chapter, 725 Scopus citations, and an h-index of 15

List of Publications:

- Sirotti S., **Pellicciari M.**, & Tarantino A. M. (2026). Large-strains beam formulation from hyperelasticity. *International Journal of Engineering Science*, 227, 104598
- **Pellicciari M.**, Sirotti S., & Tarantino A. M. (2026). On rubber elasticity from a microscale structural mechanics representation of polymer chains. *Journal of the Mechanics and Physics of Solids*, 214, 106663
- Hu C., Lin X., Xiong L., Ji T., Sirotti S., **Pellicciari M.**, Weng K., & Briseghella B. (2026). pH-controlled dual-phase formation in a magnesium phosphate-silicate composite cement revealed by thermodynamic modeling. *Journal of Building Engineering*, 128, 116498
- Aloisio A., Wang Y., **Pellicciari M.**, Liu Y., & Fragiaco M. (2026). Effect of sub-zero temperature, moisture content and loading rate on the bending strength of beech and birch wooden dowels. *Industrial Crops and Products*, 243, 123076
- Hu C., Lin X., Liu Y., **Pellicciari M.**, Tarantino A. M., Jiang H., & Ji T. (2026). Physical-chemical synergistic toughening mechanism of wollastonite powder in MgO-K₂HPO₄-SiO₂ cement system. *Construction and Building Materials*, 514, 145581
- **Pellicciari M.**, Sirotti S., & Tarantino A. M. (2026). A microstructure-informed hyperelastic model for CNT-based polymer nanocomposites under large deformations. *International Journal of Solids and Structures*, 326, 113779
- Hu C., Lin X., Deng P., Ji T., **Pellicciari M.**, Tarantino A. M., Wang X., & Weng K. (2026). Role of silica fume in autogenous shrinkage in MgO-K₂HPO₄-SiO₂ cement system: Dual effects of chemical activation and pore structure refinement. *Journal of Building Engineering*, 118, 114987
- Sirotti S., **Pellicciari M.**, Aloisio A., & Tarantino A. M. (2025). A strain energy function for the inflation of hyperelastic membranes. *Mechanics of Materials*, 209, 105442
- **Pellicciari M.**, Aloisio A., & Tomasi R. (2025). Analytical and experimental study of a novel slip-friction connector for structural mechanics. *European Journal of Mechanics-A/Solids*, 105721
- **Pellicciari M.**, Sirotti S., Aloisio A., & Tarantino A. M. (2025). Hyperelastic model for nonlinear elastic deformations of graphene-based polymer nanocomposites. *International Journal of Solids and Structures*, 308, 113144
- Aloisio A., Sejkot P., **Pellicciari M.**, Ormarsson S., Vessby J., & Fragiaco M. (2025). Instability of compressed members in timber trusses assembled with punched metal plates. *Engineering Structures*, 329, 119775
- Sirotti S., **Pellicciari M.**, & Tarantino A. M. (2024). Effect of compressibility on the mechanics of hyperelastic membranes. *International Journal of Mechanical Sciences*, 278, 109441
- **Pellicciari M.**, Sirotti S., & Tarantino A. M. (2023). A strain energy function for large deformations of compressible elastomers. *Journal of the Mechanics and Physics of Solids*, 176, 105308

- **Pellicciari M.**, Falope F. O., Lanzoni L., & Tarantino A. M. (2023). Theoretical and experimental analysis of the von Mises truss subjected to a horizontal load using a new hyperelastic model with hardening. *European Journal of Mechanics-A/Solids*, 97, 104825
- Sirotti S., **Pellicciari M.**, Aloisio A., & Tarantino A. M. (2023). Analytical pressure–deflection curves for the inflation of pre-stretched circular membranes. *European Journal of Mechanics-A/Solids*, 97, 104831
- Sirotti S., Aloisio A., **Pellicciari M.**, & Briseghella B. (2023). Empirical formulation for the estimate of the equivalent viscous damping of infilled RC frames. *Engineering Structures*, 288, 116196
- Aloisio A., De Santis Y., **Pellicciari M.**, Rosso M. M., Fragiaco M., & Tomasi R. (2023). Buckling capacity model for timber screws loaded in compression: Experimental, analytical and FE investigations. *Construction and Building Materials*, 379, 131225
- **Pellicciari M.**, Falope F. O., Lanzoni L., & Tarantino A. M. (2023). Large Deformations and Stability of the Two-Bar Truss Under Vertical Loads. In *Mechanics of High-Contrast Elastic Solids: Contributions from Euromech Colloquium 626*, 223-237
- **Pellicciari M.**, & Tarantino A. M. (2022). A continuum model for circular graphene membranes under uniform lateral pressure. *Journal of Elasticity*, 151(2), 273-303
- **Pellicciari M.**, Sirotti S., Aloisio A., & Tarantino A. M. (2022). Analytical, numerical and experimental study of the finite inflation of circular membranes. *International Journal of Mechanical Sciences*, 226, 107383
- **Pellicciari M.**, Pasca D. P., Aloisio A., & Tarantino A. M. (2022). Size effect in single layer graphene sheets and transition from molecular mechanics to continuum theory. *International Journal of Mechanical Sciences*, 214, 106895
- Aloisio A., **Pellicciari M.**, Sirotti S., Boggian F., & Tomasi R. (2022). Optimization of the structural coupling between RC frames, CLT shear walls and asymmetric friction connections. *Bulletin of Earthquake Engineering*, 20(8), 3775-3800
- Aloisio A., **Pellicciari M.**, Xue J., Fragiaco M., & Briseghella B. (2022). Effect of Pre-Hole Filled with High-Damping Material on the Inelastic Response Spectrum of Integral Abutment Bridges. *Journal of Earthquake Engineering*, 27(12), 3319-3340
- Aloisio A., **Pellicciari M.**, Bergami A. V., Alaggio R., Briseghella B., & Fragiaco M. (2022). Effect of pinching on structural resilience: performance of reinforced concrete and timber structures under repeated cycles. *Structure and Infrastructure Engineering*, 1-17
- Aloisio A., **Pellicciari M.**, Alaggio R., Nuti C., Fragiaco M., & Briseghella B. (2022). Structural robustness of an RC pier under repeated earthquakes. In *Proceedings of the Institution of Civil Engineers–Bridge Engineering*, 177(3), 152-159
- Sirotti S., **Pellicciari M.**, Briseghella B., & Tarantino A. M. (2022). Damage-Based Hysteresis Bouc-Wen Model for Reinforced Concrete Elements. *Key Engineering Materials*, 919, 178-187
- **Pellicciari M.**, & Tarantino A. M. (2021). Equilibrium and Stability of Anisotropic Hyperelastic Graphene Membranes. *Journal of Elasticity*, 144, 169-195
- **Pellicciari M.**, & Tarantino A. M. (2021). A nonlinear molecular mechanics model for graphene subjected to large in-plane deformations. *International Journal of Engineering Science*, 167, 103527
- Falope F. O., **Pellicciari M.**, Lanzoni L., & Tarantino A. M. (2021). Snap-through and Eulerian buckling of the bi-stable von Mises truss in nonlinear elasticity: A theoretical, numerical and experimental investigation. *International Journal of Non-Linear Mechanics*, 134, 103739
- **Pellicciari M.**, Sirotti S., Di Trapani F., Briseghella B., Marano G. C., Nuti C., & Tarantino A. M. (2021). A degrading Bouc-Wen data-driven model for the cyclic behavior of masonry infilled RC frames. In *COMPADYN 2021 8th ECCOMAS Thematic Conference on Computational Methods in Structural Dynamics and Earthquake Engineering*, 84-101
- Sirotti S., **Pellicciari M.**, Di Trapani F., Briseghella B., Marano G. C., Nuti C., & Tarantino A. M. (2021). Development and validation of new Bouc–Wen data-driven hysteresis model for masonry infilled RC frames. *Journal of Engineering Mechanics*, 147(11), 04021092
- **Pellicciari M.**, & Tarantino A. M. (2020). Equilibrium paths of a three-bar truss in finite elasticity with an application to graphene. *Mathematics and Mechanics of Solids*, 25(3), 705-726

- **Pelliciarì M.**, & Tarantino A. M. (2020). Equilibrium paths for von Mises trusses in finite elasticity. *Journal of Elasticity*, 138(2), 145-168
- **Pelliciarì M.**, & Tarantino A. M. (2020). Equilibrium of the von Mises Truss in Nonlinear Elasticity. *Proceedings of XXIV AIMETA Conference 2019. Lecture Notes in Mechanical Engineering* (Springer), 1743-1752
- **Pelliciarì M.**, Briseghella B., Tondolo F., Veneziano L., Nuti C., Greco R., Lavorato D., & Tarantino A. M. (2020). A degrading Bouc-Wen model for the hysteresis of reinforced concrete structural elements. *Structure and Infrastructure Engineering*, 16(7), 917-930
- **Pelliciarì M.**, Marano G. C., Cuoghi T., Briseghella B., Lavorato D., & Tarantino A. M. (2018). Parameter identification of degrading and pinched hysteretic systems using a modified Bouc-Wen model. *Structure and Infrastructure Engineering*, 14(12), 1573-1585
- Marano G. C., **Pelliciarì M.**, Cuoghi T., Briseghella B., Lavorato D., & Tarantino A. M. (2017). Degrading Bouc-Wen model parameters identification under cyclic load. *International Journal of Geotechnical Earthquake Engineering (IJGEE)*, 8(2), 60-81

PATENTS

- Co-inventor of patent No. 102020000027026. Title: "Dispositivo per l'isolamento di apparecchiature industriali, strutture e infrastrutture civili basato su moduli reticolari a traliccio"
- Co-inventor of patent No. 102020000027029. Title: "Dispositivo smorzatore assiale ad elastomeri"

OPEN-SOURCE CODE

- Publication of the code "*Pressure-Deflection Relation for Circular Mooney-Rivlin Membranes Under Uniform Lateral Pressure*" (M. Pelliciarì, S. Sirotti) in the Academic Articles & Supplements section of the Wolfram Notebook Archive
- Development of the "*BoucWenInfill Material*" code (S. Sirotti, M. Pelliciarì) for OpenSees, included in the official OpenSees documentation (Section 3.1.5.22)