Simone Morganti

Curriculum Vitæ

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1 Personal Information and Contacts

Place of birth:	Pavia (PV), Italy
Date of birth:	07/10/1983
Nationality:	Italian
Residence:	Italy

Address:	Department of Civil Engineering and Architecture Via Ferrata 3, 27100, Pavia (PV), Italy
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2 Education and Career

Academic Position

Oct. 2024 - present: **Full Professor** of Solid and Structural Mechanics
Department of Civil Engineering and Architecture (DICAr)
University of Pavia

Other Positions:

Apr. 2026 - present: **Vice Coordinator** of the PhD Program in
Design, Modeling, and Simulation in Engineering
University of Pavia

Dec. 2025 - present: **Member** of the Resource Commission of DICAr Department
Faculty of Engineering, University of Pavia

Nov. 2025 - present: **Member** of the Joint Teaching-Student Committee
Faculty of Engineering, University of Pavia

Sept. 2022 - present: **Head** of the Tutoring Program for all Structural Mechanics courses
Faculty of Engineering, University of Pavia

Aug. 2020 - July 2024: **Elected Chairman**
ECCOMAS Young Investigator Committee (EYIC)

June 2021 - Sept. 2024: **Associate Professor** of Solid and Structural Mechanics
Department of Industrial and Information Engineering
University of Pavia

June 2018 - June 2021: **Tenur-track assistant professor** of Solid and Structural Mechanics
Department of Industrial and Information Engineering
University of Pavia

Dec. 2012 - June 2018: **Assistant professor** of Solid and Structural Mechanics
Department of Industrial and Information Engineering
University of Pavia

Post-Graduate Studies:

Nov. 2011 - Dec. 2012: **Post-doctoral Research Fellow**
Subject: Isogeometric Methods for Biomechanics
Department of Mathematics F. Casorati, University of Pavia

Nov. 2008 - Sept. 2011: **PhD in Bioengineering and Bioinformatics**
University of Pavia

Feb. 2012: **Award of PhD Degree**
Thesis: Finite Element Analysis of Aortic Valve Surgery
Advisor: Prof. F. Auricchio

Pre-Graduate Studies:

Oct. 2005 - Apr. 2008: **Master of Science in Mechanical Engineering**
Politecnico di Milano, Grade: **107/110**
Thesis: Vortex-induced vibrations at high Reynolds numbers
Advisor: Prof. M. Belloli

Oct. 2002 - Jul. 2005: **Bachelor of Science in Mechanical Engineering**
University of Pavia, Grade: **110/110**
Thesis: Vibrations and control of mechanical systems:
numerical analysis and experimental contribution
Advisor: Prof. P. Venini

Honors and Awards:

Jun. 2014: **Winner of the award** "Constitutive laws for biological tissues"
Center for Mechanics of Biological Materials (CMBM), University of Padua

Apr. 2012: **Winner of the competition** "PhD ECCOMAS Olympiad 2012"
Best PhD thesis presentation (Aveiro, Portugal)

Abroad Research experiences:

Jan. 2014: **Research Scholar** at the ICES, University of Texas at Austin, TX, USA
Topic: Isogeometric collocation and incompressible elasticity
Advisor: T.J.R. Hughes

Jan. 2013 - Feb. 2013: **Research Scholar** at the ICES, University of Texas at Austin, TX, USA
Topic: Patient-specific isogeometric simulations of the aortic valve
Advisor: T.J.R. Hughes

Feb. 2010 - Aug. 2010: **Research Scholar** at the ICES, University of Texas at Austin, TX, USA
Topic: NURBS patient-specific modeling and isogeometric analysis
Advisor: T.J.R. Hughes

Participation in Conference Scientific or Organizing Committees:

July 2026: **Organizer** of the Minisymposium
Title: Modeling and Simulations of Additively Manufactured Metamaterials
Conference: WCCM-ECCOMAS 2026, Munich, Germany

July 2026: **Organizer** of the Special Technical Session
Title: Additive Manufacturing in Industry: Open Challenges and Future Perspective
Conference: WCCM-ECCOMAS 2026, Munich, Germany

Sept. 2025: **Chairman and Organizer** (with F. Auricchio) of the Conference
V International Conference on Simulation for Additive manufacturing
SIM-AM 2025, Pavia, Italy

June 2023: **Organizer of the Invited Session**
Title: Coupled Simulations for Additive Manufacturing
Conference: Coupled 2023, Chania, Crete, Greece

May 2023: **Organizer of the Invited Session**
Title: Computational methods and models for industrial applications:
the young investigators' perspective (EYIC)
Conference: M2P 2023, Taormina, Italy

Sept. 2022: **Chairman and Organizer** (with L. Tamellini and P. Zanotti) of the conference
I GIMC-SIMAI Young Conference
GIMC-SIMAI 2022, Pavia, Italy

June 2022: **Organizer** of the Minisymposium
Title: Young Investigators Minisymposium
Conference: ECCOMAS 2022, Oslo, Norway

Sept. 2021: **Member of the Scientific Committee**
VI ECCOMAS Young Investigator Conference
YIC 2021, Valencia, Spain

Sept. 2019: **Chairman and Organizer** (with F. Auricchio) of the Conference
II International Conference on Simulation for Additive manufacturing
SIM-AM 2019, Pavia, Italy

Sept. 2019: **Member of the Scientific Committee**
V ECCOMAS Young Investigator Conference
YIC 2019, Krakow, Poland

Oct. 2018: **Member of the Scientific Committee**
VI International Conference on Isogeometric Analysis
IGA 2018, Austin, TX, USA

July 2018: **Organizer** of the Minisymposium
Title: Modeling of additive manufacturing processes
Conference: ESMC 2018, Bologna, Italy

Oct. 2017: **Organizer** of the Minisymposium
Title: Additive manufacturing product simulation
Conference: SIM-AM 2017, Munich, Germany

Sept. 2017: **Member of the Organizing Committee**
V International Conference on Isogeometric Analysis
IGA 2017, Pavia, Italy

Sept. 2016: **Member of the Scientific Committee**
Frontier Biomechanical Challanges in Cardiovascular Physiopathology
ESB-ITA 2016, Palermo, Italy

June 2016: **Organizer** of the Minisymposium
Title: Simulation of Cardiovascular Procedures and Devices
Conference: ECCOMAS 2016, Crete, Greece

June 2015: **Organizer** of the Minisymposium
Title: Simulation of Cardiovascular Procedures and Devices
Conference: CMBE 2015, Cachan, France

July 2014: **Organizer and Chairman** of the Minisymposium
Title: Simulation of Cardiovascular Procedures and Devices
Conference: WCCM 2014, Barcelona, Spain

Dec. 2013: **Organizer** of the Minisymposium
Title: Simulation of Cardiovascular Procedures and Devices
Conference: CMBE 2013, Hong-Kong

Sept. 2013: **Organizer and Chairman** of the Minisymposium
Title: Computational Biomechanics: Application to cardiovascular problems
Conference: AIMETA 2013, Turin, Italy

Participation in evaluation activities

- *Mar. 2026*: **Member** of the evaluation committee for the SEMNI *Carles Simo Prize*.
- *Nov. 2025*: **Member** of the selection committee for a Full Professor position, University of Brescia.
- *Apr. 2025*: **Member** of the evaluation committee for the ECCOMAS *Best PhD Thesis* award.

- *Feb. 2025*: **External Member** of the PhD evaluation committee in Mechanical Engineering at the Technical University of Eindhoven (Netherlands).
- *Jan. 2025*: **External Member** of the PhD evaluation committee in Civil Engineering at the University of Catania.
- *Oct. 2023*: Appointed **External Member** of the PhD evaluation committee for the Department of Marine Technology at the NTNU University of Trondheim (Norway).
- *Dec. 2022*: Appointed **External Member** of the PhD evaluation committee in Civil, Environmental and Mechanical Engineering (XXXV cycle) at the University of Trento.
- *Sept. 2020*: **Member** of the evaluation committee for admission to the PhD program in Design, Modeling, and Simulation (XXXVI cycle) at the University of Pavia.
- *Sept. 2019*: **Member** of the evaluation committee for admission to the PhD program in Design, Modeling, and Simulation (XXXV cycle) at the University of Pavia.
- *June 2018*: Appointed **Member** of the evaluation committee for the ECCOMAS 8th PhD Olympiad award (Glasgow, UK).
- *Oct. 2017*: Appointed **External Member** of the PhD evaluation committee in Materials Engineering, Structures and Nanotechnologies (XXIX cycle) at the University of Salento (Lecce).
- *Sept. 2017*: **Member** of the evaluation committee for admission to the PhD program in Design, Modeling, and Simulation (XXXIII cycle) at the University of Pavia.

Editorial and reviewing activities:

- **Reviewer** of grant proposals for NWO/ZonMw Talentprogramme Vidi 2025, The Netherlands (Apr. 2026)
- **Reviewer** for the Dutch Research Council (NWO), Domain Applied and Eng. Sciences (Jul. 2019)
- **Member of the Editorial Board** of Mathematical Problems in Engineering (since Sept. 2016)
- **Selected as Reviewer** of book proposals for Elsevier (Mar. 2015, Aug. 2016, Sept. 2018, Mar. 2019, Sept. 2019, Mar. 2020)
- **Selected as Reviewer** for over 30 international journals

Participation in research projects (funded):

- *Feb. 2025 - today*: **Principal investigator (PI)** of the PRIN 2022 project, title: Advanced Design of avant-garde ACTIVE microstructured materials via additive manufacturing (ADACTIVE)
- *Apr. 2022 - Nov. 2025*: **Unit member and WP co-responsible** of the ACOUSTIC project, Innovation Agreements, Ministry of Economic Development. Principal Investigator: M. Chiabrera (Inventvm, Pavia).
- *Oct. 2020*: **Unit leader** of the Ricerca Finalizzata 2019 project, title: Impact of Thoracic Aortic disease endovascular treatment on Cardiac function (ITACA study), Principal Investigator: G. Spinella.
- *Sept. 2019 - June 2022*: **Unit member** of the PRIN 2017 project, title: 3D Printing: A bridge to the future, coordinator: F. Auricchio.
- *Oct. 2016 - June 2019*: **Unit member** of the POR FESR 2014-2020 project: Metal Additive for Lombardy (MADE4LO), coordinator: TENOVA.
- *Feb. 2016 - Feb. 2017*: **Member of the proposing team**, together with Principal Investigator G. Rozza of the INDAM-GNCS project: Computational complexity reduction techniques for applied sciences.

- *June 2014 - May 2017*: **Member of the proposing team**, together with Principal Investigator H. Gomez, of the National Program of Research, Development and Innovation oriented to the challenges of society (Spain) entitled: Computational modeling of cancer microvasculature: unraveling the topology and transport functionality of tumor-induced capillary networks.
- *Jan. 2014 - Dec. 2016*: **Member of the proposing team**, together with Principal Investigator F. Auricchio, of the Fondazione Cariplo, Regione Lombardia project, entitled: iCardioCloud, bringing cardiovascular virtual reality to clinical bedside practice through cloud platform: implementation of a US excellence paradigm into Lombardia SSR.
- *Nov. 2011 - Oct. 2015*: **Member of the proposing team**, together with Principal Investigator A. Reali, of the European project FP7 Ideas ERC Starting grant entitled: ISOBIO, Isogeometric methods for biomechanics.
- *Sept. 2010 - Aug. 2014:* **Unit member** of the FIRB project entitled: Isogeometric Discretizations for Continuum Mechanics, coordinator: G. Sangalli.
- *Aug. 2010 - July 2013*: **Member of the proposing team**, together with Principal Investigator F. Auricchio, of the CILEA project, L.I.S.A. Call entitled: BIO-FSI, Fluid-structure interaction (FSI) to evaluate the impact of root compliance on valve physiology.
- *Mar. 2010 - Feb. 2012*: **Unit member** of the PRIN 2008 project entitled: Shape memory alloy advanced modeling for civil, industrial, and biomedical engineering applications, coordinator: F. Auricchio.
- *June 2009 - Dec. 2012*: **Member of the proposing team**, together with Principal Investigator F. Auricchio, of the Fondazione Cariplo project entitled: Aortic VAlve Sparing, toward an innovative PROsthesis design (through the exploitation of advanced materials and computational mechanics).

Professional consultancies and collaborations:

- *Sept. 2023 - June 2024*: **Thermo-fluid dynamic analyses** of spray dispensers in the pharmaceutical field (client: F.lli Bettinelli).
- *June 2022 - Oct. 2022*: **Support for the design of an internal combustion engine** through computational fluid dynamic analyses (client: Energy Revolution).
- *Feb. 2020 - Oct. 2020*: **Support for the development of a calculation software** for the non-linear analysis of buildings (client: Rebel Dynamics, Lecco).
- *Sept. 2020 - Nov. 2020*: **Finite element numerical analyses** to study the thermomechanical behavior of insulating glass units (client: TGD - Thermo Glass Door SpA, Pavia).
- *July 2020*: **Development of a calculation software** for the computation of stresses and strains from experimental vibration measurements (client: Julight, Pavia).
- *July 2019*: **3D printing** of valve models with actuator for oil & gas applications (client: Cameron, Pavia).
- *Oct. 2018*: **Finite element numerical simulations** of the thermal and mechanical behavior of Wind Lidar components (client: Bright, Pavia).
- *June 2015*: **Cyclic compression tests** to evaluate the mechanical performance of new accessories for fluid dynamic valves (client: Fluid-o-Tech, Milan).
- *Jan. 2015*: **Strain measurements on a mandibular model** to evaluate the mechanical performance of an innovative implant (client: Angelo Giorgi, Pavia).
- *Feb. 2014*: **Mechanical tests** on elastic net threads to evaluate their tensile strength: comparison between different samples. Tests requested for a judicial expertise following the breakage of a trampoline and injury to a minor (client: Filippo Dacarro, Pavia).
- *Dec. 2013 - Feb. 2014*: **Experimental tests on human femur** to evaluate the impact and performance of an innovative hip prosthesis (client: Lima Corporation, Udine).

- *Mar. 2013 - Apr. 2013*: **Finite element structural analyses** to evaluate the stress and strain state of a tilting head heel-nailing machine frame (client: Brustia-Alfameccanica, Vigevano).
- *June 2011 - Dec. 2011*: **Numerical simulation of honeycomb structures** in collaboration with the University of Naples "Federico II", Department of Structural Engineering.
- *Sept. 2008 - Dec. 2010*: **Constitutive modeling of SMAs, simulation and design of devices** (client: SAES Getters Group, Lainate).

3 Scientific Activity

Main Research Topics:

a. **3D Printing and Metamaterials.** Development and validation of numerical models for the simulation of thermo-mechanical coupled phenomena in additive manufacturing processes. Modeling of metamaterials for mechanical and acoustic applications.

b. **Isogeometric Analysis.** Development of innovative methods for complex problems (e.g., cardiovascular biomechanics) to improve accuracy and computational costs compared to classical FEM.

c. **Finite Element Analysis & Cardiovascular Mechanics.** Development of simulation tools to support patient-specific pre-operative planning of cardiovascular surgeries.

d. **Computational Fluid Dynamics.** FEA of cardiovascular hemodynamics to determine velocity fields, pressure, and wall shear stress.

Scientific Production (Summary):

Author ID (Scopus): 36061956200
H-index: 28 (Scopus); **34** (Scholar)
Citations: 2358 (Scopus); **3401** (Scholar)

75 Journal articles (accepted)

1 Patents

7 Book chapters

12 International conference proceedings

4 Publications

International journal articles (accepted):

1. G. Greco, P. Gaziano, S. Anglese, **S. Morganti**, C. de Vincentiis, F. Auricchio, M. Marino, M. Conti. From Clinic to Computation: Multiscale Bioengineering Strategies for Durable Biological Aortic Valve Replacements, *Advanced Functional Materials*, e29555 (2026).
2. D. D'Aprile, F. Auricchio, **S. Morganti**. Triply periodic minimal surfaces for gradient impedance matching layers in ultrasonic transducers, *Engineering Research Express*, 7(4):045544, DOI: 10.1088/2631-8695/ae1080.
3. E. Bodo, L. Ciccarelli, V. Bello, **S. Morganti**, S. Merlo. Assessment of Vibration Frequencies of Piezo-actuated Panel by Model-Assisted Self-Mixing Interferometry. Accepted in *IEEE Open Journal of Instrumentation & Measurement* (2025).
4. A. Ruggeri, M. Magliocco, B. Pane, M. Canepa, S. Seitun, G. Pratesi, C. Menna, **S. Morganti**, G. Spinella, M. Conti. Patient-specific computational fluid hemodynamics in the ascending aorta before and after thoracic endovascular repair Accepted in Computers in Biology and Medicine (2025).

5. B. Puhan, A. Patton, **S. Morganti**, G. Rustioni, A. Reali, M. Alvaro. Investigation of microscale brittle fracture opening in diamond with olivine inclusion using XFEM and cohesive zone modeling. Accepted in *Engineering Fracture Mechanics* (2024)

6. L. Airoldi, R. Brucculeri, P. Baldini, M.A. Grande, F.S: Gobber, **S. Morganti**, F. Auricchio, U. Anselmi-Tamburini. Coupling direct powder deposition with spark plasma sintering: a new approach towards rapid prototyping. *Progress in Additive Manufacturing*, 9: 1953-1966 (2024).

7. P. Totaro, A. Caimi, G. Formenton, M. Musto, M. Schembri, **S. Morganti**, S. Pelenghi, F. Auricchio. Bicuspid valve aorthopaty: Is it reasonable a different cut off for surgery based on different aortic wall mechanical properties compared to tricuspid valve? Accepted in *Journal of Cardiovascular Development and Disease*.

8. M. Torre, **S. Morganti**, A. Nitti, M. De Tullio, J. Kiendl, F. Pasqualini, A. Reali. An efficient active-stress electromechanical isogeometric shell model for muscular thin film simulations. Accepted in *Mechanics of Materials*.

9. P. Iaccarino, E. Maresca, **S. Morganti**, F. Auricchio, E. Di Maio. Topologically-optimized graded foams. *Advanced Engineering Materials* Research Article No. adem.202301798R1.

10. S. Chattaraj, M. Torre, C. Kalcher, A. Stukowski, **S. Morganti**, A. Reali, F. Pasqualini. SEM^2: A computational framework to model multiscale mechanics with subcellular elements. *APL Bioengineering*, 7(4):046118 (2023).

11. M. Torre, **S. Morganti**, F. Pasqualini, A. Reali. Toward isogeometric modeling of the heart biophysics: A review. Accepted in *Biophysics Reviews* (2023).

12. M. Torre, **S. Morganti**, A. Nitti, M. De Tullio, F. Pasqualini, A. Reali. Isogeometric mixed collocation of nearly-incompressible electromechanics in finite deformations for cardiac muscle simulations. Accepted in *Computer Methods in Applied Mechanics and Engineering* (2023).

13. R. Brucculeri, L. Airoldi, P. Baldini, B. Vigani, S. Rossi, **S. Morganti**, F. Auricchio, U. Anselmi-Tamburini. Spark Plasma Sintering of complex metal and ceramic structures produced by material extrusion. *3D Printing and Additive Manufacturing* (2023).

14. M. Torre, **S. Morganti**, F. Pasqualini, A. Duster, A. Reali. Immersed isogeometric analysis based on a hybrid collocation/finite cell method. *Computer Methods in Applied Mechanics and Engineering*, 405: 115856 (2023).

15. P. Totaro, **S. Morganti**, F. Auricchio, S. Pelenghi. Aortic wall thickness in dilated ascending aorta: Comparison between tricuspid and bicuspid aortic valve. *Archives of Cardiovascular Diseases*116(11):498–505 (2023).

16. S. Di Meo, A. Cannatá, **S. Morganti**, G. Matrone, M. Pasian. On the dielectric and mechanical characterization of tissue-mimicking breast phantoms. *Physics in Medicine and Biology*, 67(15): 155018 (2022).

17. M. Torre, **S. Morganti**, F. Pasqualini, A. Nitti, M. De Tullio, A. Reali. An efficient isogeometric collocation approach to cardiac electrophysiology. *Computer Methods in Applied Mechanics and Engineering*, 393 (2022), 114782.

18. R. Brucculeri, L. Airoldi, P. Baldini, B. Vigani, S. Rossi, **S. Morganti**, F. Auricchio, U. Anselmi-Tamburini. Spark Plasma Sintering of Complex Metal and Ceramic Structures Produced by Robocasting. Available at SSRN 4124411 (2022).

19. M. Murer, G. Formica, F. Milicchio, **S. Morganti**, F. Auricchio. A coupled multiphase Lagrangian-Eulerian fluid-dynamics framework for numerical simulation of Laser Metal Deposition process. *The International Journal of Advanced Manufacturing Technology*, 1-18 (2022).

20. L. Airoldi, R. Brucculeri, P. Baldini, F. Pini, B. Vigani, S. Rossi, F. Auricchio, U. Anselmi-Tamburini, **S. Morganti**. 3D printing of copper using water-based colloids and reductive sintering. *3D Printing and Additive Manufacturing* (2021).

21. A. Finotello, R. Gorla, N. Brambilla, F. Bedogni, F. Auricchio, **S. Morganti**, Finite element analysis of transcatheter aortic valve implantation: Insights on the modelling of self-expandable devices. *Journal of the Mechanical Behavior of Biomedical Materials*, 123, 104772 (2021).

22. X. He, F. Auricchio, **S. Morganti**, J. Lu. Uniaxial properties of ascending aortic aneurysms in light of effective stretch. *Acta Biomaterialia* 136, 306-313 (2021).

23. M. Murer, V. Furlan, G. Formica, **S. Morganti**, B. Previtali, F. Auricchio. Numerical simulation of particles flow in Laser Metal Deposition technology comparing Eulerian-Eulerian and Lagrangian-Eulerian approaches. *Journal of Manufacturing Processes*, 68, 186-197 (2021).

24. **S. Morganti**, F. Fahrendorf, L. De Lorenzis, J.A. Evans, T.J.R. Hughes, A. Reali. Isogeometric collocation: A mixed displacement-pressure method for nearly incompressible elasticity. *CMES - Computer Modeling in Engineering & Sciences*, 129, 1125-1150 (2021).

25. F. Nappi, L. Mazzocchi, C. Spadaccio, D. Attias, I. Timofeva, L. Macron, A. Iervolino, **S. Morganti**, F. Auricchio. Corevalve vs Sapien 3 Transcatheter Aortic Valve Replacement: A Finite Element Analysis Study.*Bioengineering*, 8(5), 52 (2021).

26. A. Finotello, R. Romarowski, R. Gorla, G. Bianchi, F. Bedogni, F. Auricchio, **S. Morganti**. Performance of high conformability vs. high radial force devices in the virtual treatment of TAVI patients with Bicuspid Aortic Valve. *Medical Engineering & Physics*, 89, 42-50 (2021)

27. R. Gorla, M. Casenghi, A. Finotello, F. De Marco, **S. Morganti**, D. Regazzoli, G. Bianchi, E. Acerbi, A. Popolo Rubbio, N. Brambilla, L. Testa, F. Castriota, F. Auricchio, B. Reimers, F. Bedogni. Outcome of transcatheter aortic valve replacement in bicuspid aortic valve stenosis with new-generation devices. Accepted in Interactive CardioVascular and Thoracic Surgery (ICVTS-2020-900683) (2020)

28. F. Fahrendorf, **S. Morganti**, A. Reali, T.J.R. Hughes, L. De Lorenzis. Mixed stress-displacement isogeometric collocation for nearly incompressible elasticity and elastoplasticity, *Computer Methods in Applied Mechanics and Engineering*, 369, 113112 (2020).

29. F. Nappi, L. Mazzocchi,I. Timofeva, L. MacRon, **S. Morganti**, S.S.A. Singh, D. Attias, A. Congedo, F. Auricchio (2020). A finite element analysis study from 3D CT to predict transcatheter heart valve thrombosis. DIAGNOSTICS, vol. 10, p. 1-13, ISSN: 2075-4418, doi: 10.3390/diagnostics10040183

30. **S. Morganti**, M.L. Mazzucchelli, M. Alvaro, A. Reali. A numerical application of the Eshelby theory for geobarometry of non-ideal host-inclusion systems, *Meccanica*, 55(4), 751-764 (2020)

31. P. Totaro, S. Marconi, **S. Morganti**, A.G. Corsico, S. Pelenghi, F. Auricchio. Multidisciplinary preoperative simulations to optimize surgical outcomes in a challenging case of complete double aortic arch in the adult, *Journal of Cardiac Surgery*, DOI: 10.1111/jocs.14448 (2020).

32. R. Gorla, F. De Marco, **S. Morganti**, A. Finotello, N. Brambilla, L. Testa, M.L. Agnifili, M. Tusa, F. Auricchio, F. Bedogni. Transcatheter aortic valve implantation with Portico and Evolut-R in patients with elliptic aortic annulus, *EuroIntervention*, 15(18):e1588-e1591 (2020).

33. A. Cattenone, **S. Morganti**, F. Auricchio. Basis of the Lattice Boltzmann Method for Additive Manufacturing, *Archives of Computational Methods in Engineering*, 27:1109-1133 (2020).

34. M.L. Mazzucchelli, A. Reali, **S. Morganti**, R.J. Angel, M. Alvaro. Elastic geobarometry for anisotropic inclusions in cubic hosts, *Lithos*, 350:105218 (2019).

35. G. Balduzzi, **S. Morganti**, J. Fussl, M. Aminbaghai, A. Reali, F. Auricchio. Modeling the non-trivial behavior of anisotropic beams: a simple Timoshenko beam with enhanced stress recovery and constitutive relations, *Composite Structures*, 229, 111265 (2019).

36. F. Auricchio, A. Bacigalupo, L. Gambarotta, M. Lepidi, **S. Morganti**, F. Vadala. A novel layered topology of auxetic materials based on the tetrachiral honeycomb microstructure, *Materials and Design*,179,107883 (2019).

37. C. Anzolini, F. Nestola, M.L. Mazzucchelli, M. Alvaro, P. Nimis, A. Gianese, **S. Morganti**, F. Marone, M. Campione, J.W. Harris. Depth of diamond formation obtained from single periclase inclusions, *Geology* (2019), DOI: 10.1130/G45605.1.

38. A. Cattenone, **S. Morganti**, G. Alaimo, F. Auricchio. Finite element analysis of Additive Manufacturing based on Fused Deposition Modeling (FDM): distortion prediction and comparison with experimental data. *Journal of Manufacturing Science and Engineering*, vol. 141(1):011010 (2019).

39. F. Nappi, L. Mazzocchi, S.S.A. Singh, **S. Morganti**, J.-L. Sablayrolles, C. Acar, F. Auricchio. Complementary Role of the Computed Biomodelling through Finite Element Analysis and Computed Tomography for Diagnosis of Transcatheter Heart Valve Thrombosis, *BioMed Research International*, vol. 2018, Article ID 1346308, 13 pages (2018).

40. A. Nenna, S.S.A. Singh, **S. Morganti**, L. Mazzocchi, F. Auricchio, M. Chello, F. Nappi. Transcatheter technologies for valvular replacement: an update, *Cardiovascular & Thoracic Surgery*, Surgical Technology International vol. 32:190-199, 2018.

41. R. Romarowski, M. Conti, **S. Morganti**, V. Grassi, M.M. Marrocco-Trischitta, S. Trimarchi, F. Auricchio, Computational simulation of TEVAR in the ascending aorta for optimal endograft selection: a patient-specific case study, *Computers in Biology and Medicine*, DOI:CBM-D-18-00910R2.

42. M. Conti; S. Vandenberghe, S. Marconi, E. Ferrari, R. Romarowski, **S. Morganti**, F. Auricchio, S. Demertzis. Reversed auxilliary flow to reduce embolism risk during TAVI: a computational simulation and experimental study, *Cardiovascular Engineering and Technology*,

43. R. Romarowski, A. Lefieux, **S. Morganti**, A. Veneziani, F. Auricchio. Patient-Specific CFD modeling in the Thoracic Aorta with PC-MRI Based Boundary Conditions: a Least-Square 3-Element Windkessel approach, *International Journal for Numerical Methods in Biomedical Engineering*, 34:e3134 (2018).

44. R. Romarowski, E. Faggiano, M. Conti, A. Reali, **S. Morganti**, F. Auricchio. A novel computational framework to predict patient-specific hemodynamics after TEVAR: integration of structural and fluid-dynamics analysis by image elaboration, *Computers & Fluids*, 179 (2019): 806-819.

45. A. Sibileau, A. García-Gonzáles, F. Auricchio, **S. Morganti**, P. Diez. Explicit parametric solutions of lattice structures with proper generalized decomposition (PGD), *Computational Mechanics*, 62(4):871-891 (2018).

46. **S. Morganti**, C. Callari, F. Auricchio, A. Reali. Mixed isogeometric collocation methods for the simulation of poromechanics problems in 1D, *Meccanica*, 53(6):1441-1454 (2018).

47. M.L. Mazzucchelli, P. Burnley, R.J. Angel, **S. Morganti**, M.C. Domeneghetti, F. Nestola, M. Alvaro. Elastic geothermobarometry: corrections for the geometry of the host-inclusion system, *Geology*, DOI:10.1130/G39807.1.

48. F. Xu, **S. Morganti**, R. Zakerzadeh, D. Kamensky, F. Auricchio, A. Reali, T.J.R. Hughes, M.S. Sacks, M.-C. Hsu. A framework for designing patient-specific bioprosthetic heart valves using immersogeometric fluid-structure interaction analysis, *International Journal for Numerical Methods in Biomedical Engineering*, 34(4), e2938 (2018).

49. A. Ferrara, **S. Morganti**, P. Totaro, F. Auricchio. Effects of clinico-pathological risk factors on invitro mechanical properties of human dilated ascending aorta, *Journal of the Mechanical Behavior of Biomedical Materials*, 77: 1-11 (2018).

50. A. Finotello, **S. Morganti**, F. Auricchio. Finite element analysis of TAVI: impact of native aortic root computational modeling strategies on simulation outcomes, *Medical Engineering & Physics*, 47:2-12 (2017).

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Patents:

1. U. Anselmi-Tamburini, F. Auricchio, **S. Morganti**. *Manufacture of ceramic objects*, Patent number: PCT/EP2017/059932 (2017).

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1. A. Cattenone, G. Alaimo, **S. Morganti**, F. Auricchio, Modeling and Simulation of Additive Manufacturing Processes, *ECCOMAS (European Community on Computational Methods in Applied Sciences) Newsletter* (June 2018).

2. F. Auricchio, M. Conti, **S. Morganti**, A. Reali, Patient-specific simulations in cardiovascular biomechanics: from diagnosis to prediction, *ECCOMAS (European Community on Computational Methods in Applied Sciences) Newsletter* (June 2012).

International book chapters:

1. D. D'Aprile, **S. Morganti**, A. Cutolo, M. Fraldi, F. Auricchio. Buckling of Planar Beams with Variable Inertia in: *Advances and Challenges in Computational Mechanics* (2026)

2. **S. Morganti**, M. Conti, A. Reali, F. Auricchio. Predictive computational models of transcatheter aortic valve implantation, in: *Transcatheter Aortic Valve Implantation*, Nova Science Publisher (2018).

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5 Seminars and presentations

Invited seminars or presentations:

1. **S. Morganti**, Structures and new materials for extreme environments, at ITIR Summit 2026 (Pavia, Italy, Mar. 11, 2026).

2. **S. Morganti**, Design and application of architected materials and structures, at D3 International Colloquium Pavia//Dresden (Pavia, Italy, Oct. 7, 2025).

3. **S. Morganti**, Active materials, smart structures, digital twins...towards the future, at ITIR Summit 2025 (Pavia, Italy, Jan. 23, 2025).

4. **S. Morganti**, Semi-plenary Lecture at Intensive Summer School on Computational Cardiology: theory, applications and new trends, ISSCC2025 (Milan, Italy, June 11, 2025).

5. **S. Morganti**, Simulation of the aortic valve complex: from structural FEM to isogeometric FSI, at SISSA (Trieste, Italy, Sept. 17, 2018).

6. **S. Morganti**, Engineering (computational) tools to support minimally invasive cardiology: focus on TAVI, at GISE, (Genoa, Italy, Oct. 17, 2014).

7. **S. Morganti**, Finite element analysis as a TAVR predictive tool, at Papa Giovanni XXIII Hospital (Bergamo, Italy, Mar. 13, 2013).

Presentations at international conferences (speaker):

1. **S. Morganti**, M. Torre, A. Reali. Development of mixed isogeometric collocation schemes with some advanced applications, M&MoCS 2024 (Syracuse, Italy, Sept. 16-20, 2024).

2. **S. Morganti**, M. Torre, A. Reali. Mixed isogeometric collocation methods with application to cardiac electromechanics, ACM 2023 (Austin, TX, USA, Oct. 28-15, 2023).

3. **S. Morganti**, M. Torre, F. Fahrendorf, L. De Lorenzis, J.A. Evans, T.J.R. Hughes, A. Reali. Isogeometric collocation: A mixed displacement-pressure method for nearly incompressible elasticity in small and large deformations, ECCOMAS 2022 (Oslo, Norway, June 5-9, 2022).

4. **S. Morganti**, G. Alaimo, A. Cattenone, M. Murer, G. Formica, F. Auricchio. Computational simulations for industrial applications in additive manufacturing, ECCOMAS-WCCM 2020 (Paris, France, Jan. 11-15, 2021).

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8. **S. Morganti**, F. Auricchio, A. Finotello, N. Brambilla, F. Bedogni. Finite element analysis of TAVI: impact of possible modeling strategies on simulation outcomes. ESB 2017 (Seville, Spain, July 1-5, 2017).

9. **S. Morganti**, A. Reali, F. Auricchio, F. Xu, M.-C. Hsu. Immersogeometric Fluid-Structure Interaction Analysis of Patient-Specific Aortic Valve Designs. FEF 2017 (Rome, Italy, Apr. 5-7, 2017).

10. **S. Morganti**, F. Auricchio, A. Ferrara, E. Lanzarone, R. Romarowski. Aortic aneurysm: computational fluid mechanics and mechanical characterization. ESB 2016 (Lyon, France, July 10-14, 2016).

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12. **S. Morganti**, L. De Lorenzis, J.A. Evans, T.J.R. Hughes, A. Reali. Isogeometric collocation: mixed elasticity for plane strain problems. IGA 2015 (Trondheim, Norway, June 1-4, 2015).

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14. **S. Morganti**, F. Auricchio, L. De Lorenzis, J.A. Evans, T.J.R. Hughes, A. Reali. Isogeometric collocation: Incompressible elasticity, locking, and possible solutions. IGA 2014 (Austin, Texas, USA, Jan. 8-10, 2014).

15. **S. Morganti**, F. Auricchio, A. Reali, M. Conti. Patient-specific finite element analysis of TAVI: evaluation of paravalvular leakage and prosthesis post-operative configuration. CMBE 2013 (Hong Kong, Dec. 16-18, 2013).

16. **S. Morganti**, F. Auricchio, M. Conti, A. Reali. Patient-specific simulation of aortic valve behavior and percutaneous implantation. ICBT 2013 (Hannover, Germany, Nov. 20-22, 2013)

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21. **S. Morganti**, F. Auricchio, S. Hartmann, TJR Hughes, A. Reali. An Application of Isogeometric Analysis in the Biomedical Field of Heart Valve Mechanics. ICCE 2011 (Darmstadt, Germany, Oct. 4-6, 2011).

Presentations at national conferences (speaker):

1. **S. Morganti**, M. Torre, A. Reali. Mixed isogeometric collocation methods with application to cardiac electromechanics, GIMC 2023 (Reggio Calabria, Italy, July 12-14, 2023).

2. **S. Morganti**, A. Cattenone, F. Auricchio. Simulation of additive manufacturing processes: preliminary results and perspectives, GIMC 2018 (Ferrara, Italy, Sept. 13-14, 2018).

3. **S. Morganti**, G. Alaimo, F. Auricchio, H. Giberti, S. Marconi. Additive manufacturing for a low-cost biaxial testing machine, AIMETA 2017 (Salerno, Italy, Sept. 4-7, 2017).

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5. **S. Morganti**, F. Auricchio, A. Finotello, N. Brambilla, F. Bedogni. Finite Element Analysis of TAVI: Impact of native valve modeling strategy on simulation outcomes, ESB-ITA (Palermo, Italy, Sept. 8-9, 2016).

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10. **S. Morganti**, F. Auricchio, M. Conti, A. Reali. Patient-specific finite element analysis of transcatheter aortic valve implantation: towards reliable predictions to support procedure planning, AIMETA 2013 (Turin, Italy, Sept. 14-19, 2013).

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