

# FERDINANDO AURICCHIO

## CURRICULUM VITAE

**Born:** June 1st, 1965, in Napoli (Italy)

**Email:** [auricchio@unipv.it](mailto:auricchio@unipv.it)

**Personal Web-page:** [www.unipv.it/auricchio](http://www.unipv.it/auricchio)

**Group Web-page:** [www.unipv.it/compmech](http://www.unipv.it/compmech)

### RESEARCH UNIQUE IDENTIFIER:

**ResearcherID:** B-9405-2009

**Orcid:** <https://orcid.org/0000-0002-3735-2400>

### SCIENTIFIC PRODUCTION:

- **367 DOCUMENTS ON ISI, 371 DOCUMENTS ON SCOPUS**
- **H-Index: 51** according to **ISI**; **52** according to **Scopus**
- **Citations: 8710** according to **ISI**; **9331** according to **Scopus**
- **Citations excluding self-citations: 7957** according to **ISI**; **7602** according to **Scopus**
- **1 Highly Cited Paper** according to ISI (i.e., papers that rank in the top 1% by citations for field and year in *Web of Science*)
- **6 patents**

### TOP 5 MOST CITED PAPERS:

- F. Auricchio, R.L. Taylor, J. Lubliner. "Shape-memory alloys: macro-modelling and numerical simulations of the superelastic behavior", *Computer Methods in Applied Mechanics and Engineering*, 146 (3-4): 281-312 (1997). **Citations: ISI 370, Scopus 415**
- F. Auricchio, R.L. Taylor. "Shape-memory alloys: modelling and numerical simulations of the finite-strain superelastic behavior", *Computer Methods in Applied Mechanics and Engineering*, 143 (1-2): 175-194 (1997). **Citations: ISI 283, Scopus 318**
- F. Migliavacca, L. Petrini, M. Colombo, F. Auricchio, R. Pietrabissa. "Mechanical behavior of coronary stents investigated through the finite element method", *Journal of Biomechanics*, 35 (6): 803-811 (2002). **Citations: ISI 204, Scopus 258**
- Auricchio, F., Da Veiga, L.B., Hughes, T.J.R., Reali, A., Sangalli, G. "Isogeometric collocation methods", *Mathematical Models and Methods in Applied Sciences*, 20 (11): 2075-2107 (2010). **Citations: ISI 203, Scopus 234**
- F. Auricchio, E. Sacco. "A one-dimensional model for superelastic shape-memory alloys with different elastic properties between austenite and martensite", *International Journal of Nonlinear Mechanics*, 32 (6): 1101-1114 (1997). **Citations: ISI 185, Scopus 193**

### AMOUNT OF FUNDING GRANTS (OVER LAST 5 YEARS):

The research group on "Computational Mechanics and Advanced Materials" founded and led by F.Auricchio has been able to collect funding in the order of **2,000,000 Euro** over the last 5 years.

### **CURRENT ACADEMIC POSITION:**

- Since 2001 **Full Professor** of Solids and Structural Mechanics, Department of Civil Engineering and Architecture (previously Department of Structural Mechanics), University of Pavia, Italy
- Since 2001 **Research Associate** at IMATI-CNR (Institute for Applied Mathematics and Information Technologies of the National Research Council), Pavia, Italy

### **PAST ACADEMIC POSITION:**

- 1998-2001 **Associate Professor** of Mechanics of Solids, Department of Structural Mechanics, University of Pavia, Italy
- 1994-1998 **Assistant Professor** of Mechanics of Solids, Department of Civil Engineering, University of Roma “Tor Vergata”, Italy

### **EDUCATION:**

- 1995 **Doctor of Philosophy** (Ph.D.), Department of Civil Engineering, University of California at Berkeley, USA
- 1991 **Master of Science** (M.S.), Department of Civil Engineering, University of California at Berkeley, USA
- 1989 **Bachelor degree** in Civil Engineering with laude, University of Napoli, Italy

### **AWARDS, HONORS, FELLOWSHIPS:**

- Since 2018 Member of the **Italian National Academy of Science** (known also as Accademia dei XL)
- 2019 Eugenio Beltrami Prize for Senior Engineering Scientist Prize, M&MOCS International Research Center on Mathematics and Mechanics of Complex Systems
- 2018 Theodore von Karman Fellowship for incoming scientists, RWTH Aachen University (Germany)
- 2016 **Euler Medal** by **ECCOMAS** (European Community of Computational Methods in Applied Sciences). Award description can be found at <http://www.eccomas.org/spacehome/1/4>
- 2015 San Siro Merit by Comune di Pavia. Award description can be found at [www.comune.pv.it/site/home/il-comune/documento7503.html](http://www.comune.pv.it/site/home/il-comune/documento7503.html)
- 2012 **Fellow Award** by **IACM** (International Association for Computational Mechanics). Award description can be found at <http://www.iacm.info/vpage/1/0/Prizes-and-Awards/IACM-Awards>

### **PROFESSIONAL COMMITTEES AND ACTIVITIES (SELECTED):**

- Since 2019 President-elect of **ECCOMAS** (European Community of Computational Methods in Applied Sciences).
- Since 2020 Member of the international academic network within the Cluster of Excellence “Integrative Computational Design and Construction for Architecture (IntCDC)” at University of Stuttgart
- Since 2019 Inaugural member of the Technical Committee on Architected Materials within the Engineering Mechanics Institute (EMI) of ASCE
- Since 2018 Member of the Executive Council for IACM
- Since 2017 Member fo the Executive Council for SISCO (Italian Society of Structural Mechanics)
- Since 2015 Vice-president of IDBN, the Italian Digital Biomanufacturing Network
- Since 2015 **3D@UniPV proponent and coordinator** of University of Pavia strategic thematic project on “Virtual Modeling and Additive Manufacturing (3D printing) for Advanced Materials” (<http://www.unipv.it/3d>)
- Since 2015 Member of the “**Additive Manufacturing**” Thematic Group **Steering Committee** within Lombardy technological cluster for Smart Industry (AFIL)
- Since 2015 University of Pavia Representative within the national technological cluster “**Smart Industry**” (CFI)
- Since 2015 Member of the **Steering Committee** for the thematic group **GTTS 1 System for personalized manufacturing** within the national technological cluster “**Smart Industry**”

Since 2015 Member of Special Interest Group (SIG) in "Advancing the design of medical stents", with an official backing from ECMI (European Consortium for Mathematics in Industry)

Since 2014 Member of the **ECCOMAS Industry Interest Group (IIG)** with the Industrial Liaison Committee (ILC)

Since 2013 Member of the **Advisory Committee on Technical Standards for Constructions** for CNR (National Italian Research Council)

Since 2011 Member of the European Society of Biomechanics

Since 2010 Reviewer for ESF (European Science Foundation)

2020 Member of the ECCOMAS 2020 award committee

2019 **Member** of the **Serra Húnter selection international committee** for three positions as **Tenure-eligible Lecturer in Mechanics of Continuous Media and Theory of Structures**, offered at the Universitat Politècnica de Catalunya (UPC), Spain

2019 **Member** of the evaluation committee for the **German Excellence Initiative** (University of Bochum), Germany

2013-2019 **Vice-President of ECCOMAS** (European Community of Computational Methods in Applied Sciences)

2015-2019 **Director** of the “**Computational Mechanics and Advanced Materials**” joint Center between University of Pavia and University of Napoli Federico II

2012-2018 **Department Chair** (Department of Civil Engineering and Architecture)

2018 Member of the ECCOMAS Award committee

2015-2017 **Member of VQR 2011-2014** (Committee for the Evaluation of the Italian University and Research System in Civil Engineering GEV 8.b)

2014-2017 **Coordinator** of the **Ph.D. Program in “Civil Engineering and Architecture”**

2013-2016 Member of the **Academic Senate**

2013 **External referee** of the ERC Consolidator Grant 2013 project proposals

2011-2014 **Member of VQR 2004-2010** (Committee for the Evaluation of the Italian University and Research System in Civil Engineering and Architecture GEV 8)

2011-2014 **Chairman** of the **Civil Engineering sub-Committee** within the Evaluation of the Italian University and Research System (VQR 2004-2010)

2011 Member of PhD-Award Committee for ECCOMAS

2011 **Member** of the evaluation committee for the **German Excellence Initiative** (University of Bochum)

2010-2017 **Coordinator** of the **Ph.D. program in “Computational Mechanics and Advanced Materials”**, program also involved in an **Erasmus Mundus Joint Doctorate Program** entitled “Simulation in Engineering and Entrepreneurship Development - SEED”

2009-2013 **Member** of the **International Activity Committee** (University of Pavia)

2009-2013 **Member** of the General Council of **IACM**

2009-2013 **Member** of the Managing Board and of the Executive Committee of **ECCOMAS**

2009-2013 **Member** of the **Scientific Committee** of CeSNA (Center for Advanced Numerical Simulation) at IUSS (Istituto Universitario di Studi Superiori, Pavia)

2003-2009 **Department Chair** (Department of Structural Mechanics)

2002-2013 Member of the Scientific Committee of IUSS

2001-2013 Member of the French-Italian “Lagrange laboratory”

2001-2013 Professor at the “European School for Advanced Studies on Seismic Risk Reduction”

#### **MEMBERSHIPS TO EDITORIAL BOARD OF INTERNATIONAL JOURNALS:**

Since 2017 Contributing Editor for **Mechanics of Advanced Materials and Structures Journal**

Since 2016 Editorial board member for **International Journal of Plasticity**

Since 2014 Editorial advisory board member for **Journal of Structural Mechanics**

Since 2013 Editorial board member for **Journal of Computational Bioengineering**

Since 2012 Editorial advisory board member for **Computer Assisted Methods in Engineering and Science**

Since 2012 Editorial advisory board member for **Advanced Modeling and Simulation in Engineering Sciences**

Since 2011 Editorial board member for **Computational Mechanics**

Since 2010	Editorial board member for <b>Computer Methods in Applied Mechanics in Engineering</b>
Since 2009	Editorial board member for <b>Annals of Solid and Structural Mechanics</b>
Since 2004	Advisory board member for <b>International Journal for Numerical Methods in Engineering</b>
2014-2016	Editorial advisory board member for <b>Curved and Layered Structures</b>
2011-2015	Corresponding editor for <b>Computer Modeling in Engineering &amp; Sciences</b>

#### ACTIVE RESEARCH GRANTS:

2020-2022	“Digital Smart Fluidics (Fluidica Digitale per le Scienze della Vita)”, funded by Regione Lombardia, <u>unit leader</u>
2019-2022	“3D Printing: a bridge to the future (3DP_Future). Computational methods, innovative applications, experimental validations of new materials and technologies”, funded by MIUR (Italian Department of University Research), <u>project leader</u>
2019-2021	“MATER: Myco-Advanced leather matERials”, funded by Regione Lombardia and Fondazione Cariplo, <u>unit member</u>
2018-2020	“MALAN: Mapping of aortic arch hemodynamics by biomechanical analysis and modeling for planning Thoracic Endovascular Aortic Repair (TEVAR)”, funded by Italian Department of Health, <u>unit leader</u>
2017-2021	“ProTechTion: Industrial decision-making on complex Production Technologies supported by simulation-based engineering”, funded under the H2020 Program, <u>unit leader</u>

#### PAST RESEARCH GRANTS:

2017-2019	“Smart Living Tpro.SL: TransparentTech for SmartLiving”, funded by Regione Lombardia, <u>unit leader</u>
2017-2019	“MADE4LO: Metal ADditive for Lombardy”, funded by Regione Lombardia, <u>unit leader</u>
2016-2018	“New Materials and Technologies for Stereo lithography 3D printing”, Regione Lombardia & INSTM, <u>project leader</u>
2015-2018	“3D@UniPV: Virtual Modeling and Additive Manufacturing (3D printing) for Advanced Materials”, University of Pavia, <u>project leader</u>
2016	“Fab@Hospital for bone plate fabrication and patient anatomy reconstruction using rapid prototyping technologies”, CNR (National Research Council), <u>unit leader</u>
2014-2016	“iCardioCloud. Bringing cardiovascular virtual reality to clinical bedside practice through cloud platform: implementation of a US excellence paradigm into Lombardia SSR”, Regione Lombardia and Fondazione Cariplo, <u>project leader</u>
2014	“Fab@Hospital. Hospital Factory for Manufacturing Customized, Patient Specific 3D Anatomic-Functional Model and Prostheses”, CNR, <u>unit leader</u>
2013-2016	“Advanced mechanical modeling of new materials and technologies for the solution of 2020 European challenges”, MIUR (Italian Department of University Research), <u>project leader</u>
2009-2013	“Aortic VALve Sparing: toward an innovative PROsthesiS design (through the exploitation of advanced materials and computational mechanics)”, Fondazione Cariplo, <u>project leader</u>
2010-2012	“Shape-memory-alloy advanced modeling for civil, industrial and biomedical engineering applications”, MIUR, <u>project leader</u>
2007-2009	“SMARTeR Shape Memory Alloys to Regulate Transient Responses in civil engineering”, ESF (European Science Foundation) within S3T program, <u>unit leader</u>
2006-2008	“Shape-memory alloy active microactuators and devices for biomedical applications: constitutive modeling, structural analysis, design, use of laser techniques for prototype implementation and experimental validation”, MIUR, <u>project leader</u>
2005-2007	“Superelastic behaviour of shape-memory alloys: development of three-dimensional numerical models and device simulations”, CNR, <u>unit leader</u>
2004-2006	“Shape-memory alloys: constitutive modeling, structural behavior, experimental validation and applicability to innovative biomedical applications” MIUR, <u>project leader</u>
2002-2003	“Shape-memory alloys: constitutive modeling, structural behavior, experimental validation and applicability to innovative biomedical applications” MIUR, <u>project leader</u>

- 2001 “Self-diagnosing materials: constitutive modelling and structural element analysis”, CNR, local unit leader
- 2001 “Tridimensional finite element biomechanical analysis of stent implants and of the mechanical endoprosthesis-vessel interaction”, CNR, unit leader

### CONSULTANCY WORK (SELECTED):

- 2019 “Supporto allo sviluppo di un programma di calcolo per l'analisi non lineare di edifici”, Rebel Dynamics (Italy)
- 2018 “Esecuzione di un programma di ricerca finalizzato allo studio di supporti anatomici per la realizzazione di fantocci medicali con tecnologie di stampa 3D”, Graftonica Srl (Italy)
- 2018 “Realizzazione di un modello 3D patient-specific di esofago e relative varici esofagee”, Sidam Srl
- 2016 “Programma di ricerca finalizzato allo Studio anche tramite esecuzione di test su provini di materiali a base di filo ABS, delle proprietà di materiali polimerici quando trasformati con tecnologie di stampa 3DFDM a deposizione di filo fuso”, Versalis Spa (Italy)
- 2016 “Study and evaluation of innovative algorithm for diagnosis based on imaging”, MOXOFF (Italy)
- 2015 “Feasibility study in the use of styrene-based polymers in the design and realization of low cost 3D printing prototypes and components”, Versalis (Italy)
- 2015 “Experimental investigation on jaw mock-up deformation”, Studio Odontotecnico Giorgi (Italy)
- 2015 “Compression tests on anti-freezing rubber supports”, Fluid-o-Tech (Italy)
- 2014 “3D printing prototyping of three aortic models”, Department of Biochemical Sciences – University of Milano (Italy)
- 2014 “3D printing prototyping using FDM”, Thermo Glass Door (Italy)
- 2014 “3D printing prototyping of components for the training on deafness implantology”, Bquadro Congressi (Italy)
- 2014 “Experimental investigation on elastic wires”, Ing. F. Dacarro
- 2013 “Feasibility study for the design of an opening and sliding mechanism for wardrobe doors, with innovative and universal features such that the same mechanism may work for a wide variety of doors, without requiring custom-made solutions” Hitalfa Srl (Italy), Smarrita Camilla Design (Italy), NONESISTE Design Lab (Italy)
- 2013 “Mechanical testing on femurs”, Lima Corporate (Italy)
- 2013 “Structural investigation of a new manufacturing machine Mod.FC3013 Montaboette-Montafianchi”, Brustia Alfameccanica (Italy)
- 2008 “Validation of a SMA constitutive model”, Saes Getters (Italy)
- 2008 “Feasibility study for the design of an opening and sliding mechanism for wardrobe doors, with innovative and universal features such that the same mechanism may work for a wide variety of doors, without requiring custom-made solutions”, HITALFA srl & Smarrita Camilla design + NONESISTE DesignLab
- 2008 “Polymer active surfaces using shape memory alloys”, Agom International srl
- 2007 “Analysis of Actuators with Shape Memory Effects”, Nokia Corporation
- 2004 “Naval use of polyetheran composites”, Fast-Form S.r.l.
- 2003 “Design indications for rectangular pressure vessels”, Fedegari Autoclavi
- 2001 “Implementation of SMA constitutive models”, MSC Marc Software Corporation
- 1999 “Implementation of SMA constitutive models”, LS-Dyna Software Corporation
- 1997 “Functional adaptive composites”, Fiat Research Center

### CURRENT INSTITUTIONAL TEACHING ACTIVITIES:

- **Introductory Computational Mechanics**, Civil Engineering program, University of Pavia
- **Constitutive Modeling of Materials**, Biomedical Engineering program, University of Pavia
- **Biomechanics & Biomedical Device Simulation**, Biomedical Engineering program, University of Pavia
- **3D printing: virtual modeling and additive manufacturing**, University of Pavia

### PAST INSTITUTIONAL TEACHING ACTIVITIES (SELECTED):

- **Mechanics of Solids and Structures**, Civil Engineering program, University of Pavia
- **Mechanics of Solids and Structures**, Electrical Engineering program, University of Pavia

### POST-GRADUATE TEACHING ACTIVITIES (SELECTED):

- **Nonlinear Computational Solid & Structural Mechanics: theoretical formulations, technologies, and computations** (with F. Brezzi, R.L. Taylor, M. Bischoff, A. Reali, G. Sangalli):
  - Pavia, May 25-29, 2020
  - Pavia, May 21-25, 2018
  - Pavia, May 16-20, 2016
  - Pavia, May 5-9, 2014
  - Pavia, April 16-20, 2012
  - Pavia, April 12-16, 2010
- **State of the art computational methods for nonlinear solid mechanics**, within the European Joint Doctorate Programmes SEED and ProTechTion and the European Training Network AdMoRe, Pavia 8-10 July 2019 (with J. Bonet, A.J. Gil, C.H. Lee, R. Ortigosa, Dr. R. Poya)
- **Biomechanics of soft Tissues: multiscale modeling, simulation and applications**, Graz University of Technology, Austria July 4-8, 2016, coordinated by Gerhard A. Holzapfel and Ray W. Ogden
- **Advanced Finite Element Technologies, CISM** (with D. Reddy, A. Huerta, P. Wriggers, J. Schroder, G. Starke), Udine, October 6 - 10, 2014
- **Nonlinear Computational Solid & Structural Mechanics: theoretical formulations, FEM technology and computations** (with F. Brezzi, R.L. Taylor, A. Ibrahimbegovic) Pavia, May 14-18, 2007
- **Advanced Finite Element Methods for Continuum Mechanics** course within EUA4X European project (European Atelier for Engineering and Computational Sciences), series of lectures, 2006
- **Mixed Finite Element Technologies, CISM** (with F. Armero, S. Brenner, R. Sacco, R. Stenberg, P. Wriggers) Udine, October 2005

### RESEARCH TOPICS (SELECTED):

- **3D printing**: modeling of phenomena occurring during 3D printing at different scales and with different technologies (mainly, FDM & LSM), activation of a 3D printing lab with different technologies
- **Mixed finite elements**: development and analysis of finite element methods for Reissner-Mindlin plates, laminates, shells, locking problems in small and large deformation regimes
- **Material constitutive modeling**: static and dynamic response for low and high number of cycles (metals, polymers, rubbers), advanced materials (shape memory alloys and self-diagnosing materials)
- **Biomechanics**: constitutive laws for biological tissue, modeling and investigation of minimally invasive procedures (stenting) as well as invasive cardio-surgery procedures, generation of computational models from patient-specific medical images
- **Isogeometric analysis**: structural mechanics problems in small and large deformations
- **Fluid-structure interaction**: mathematical modeling and applications to hydraulics and cardiovascular applications
- **Fast/impact dynamics**: development of meshless numerical techniques, smoothed particle hydrodynamics (SPH) methods
- **Advanced materials for the reduction of seismic risk**: development of innovative devices

### SUPERVISION OF YOUNG RESEARCHERS:

- **Currently supervisor** of 4 Post-doc, 12 PhDs, and 6 Master students
- **Past-supervisor** of 8 Post-docs, 18 PhDs, and more than 45 Master students
- Past foreign PhD students and PostDocs from: Canada, Israel, Iran, Taiwan, China, Argentina

### ACCOMPLISHMENTS OF SUPERVISED RESEARCHERS (SELECTED):

#### Alessandro Reali

- 2016 IACM Fellows Award
- 2015 TUM-IAS Fischer Fellowship
- 2015 Thomson-Reuters Highly Cited Researcher
- 2015 Thomson-Reuters Highly Cited Researcher
- 2014 IACM Argyris Award
- 2013 AIMETA Junior Price
- 2012 ECCOMAS Zienkiewicz Award

2012 ECCOMAS Olympiad Award  
2011 ECCOMAS best Italian Ph.D. dissertation  
2010 ERC Starting grant

#### Michele Conti

2016 ESC (European Society of Cardiology) Research Grant  
2014 E. Kieffer Prize. 6th International Congress Aortic Surgery and Anesthesia  
2010 PhD thesis selected as the Italian candidate for ECCOMAS Award for the Best PhD Theses 2010

#### Simone Morganti

2014 Recipient of the Tissue Mechanics Prize awarded by the Centre for Mechanics of Biological Materials (CMBM) of the University of Padua  
2012 Winner of ECCOMAS PhD Olympiad 2012 for the Best Thesis Presentation (Aveiro, Portugal)  
2011 PhD thesis selected as the Italian candidate for ECCOMAS Award for the Best PhD Theses 2011.

#### Stefania Marconi

2014 Best Project Work Award within the project “INNO-TAL Talenti per l’innovazione globale e la professionalizzazione”, Fondazione Cariplo

### **CURRENT ACADEMIC POSITION OF SUPERVISED RESEARCHERS:**

- 1 Full Professor (Alessandro Reali)
- 2 Associate Professors (Lorenza Petrini, Edoardo Artioli)
- 2 Assistant Professors (Michele Conti, Simone Morganti)

### **EXPERIMENTAL LABS (SELECTED):**

**All the listed labs are devoted to undergraduate, graduate, and post-graduate activities**

- **Proto-lab:** created with the idea of providing a rapid-prototyping service, to realize a physical model directly from a virtual CAD model.  
The laboratory is equipped with a Objet 30Pro 3D printer, able to print models in 7 different materials; a 3DSystems ProJet 460 Plus, a professional, full-color, binder jetting printer; a 3NTR A4v2, a professional FDM printer, dual Bowden extruder, able to process a very broad class of materials thanks to high temperature; a 3NTR A4v3, a professional FDM printer, triple Bowden extruder, hot chamber, able to print multi-material models; a Leapfrog Creatr HS, an FDM printer, dual Bowden extruder, particularly suitable for relatively high speeds printing of large objects with common materials; a Leapfrog Creatr, dual Direct extruder, especially suitable when printing low modulus filaments as thermoplastic polyurethanes.
- **β-lab:** established as a collaboration between Pavia University, IRCCS San Donato, and CNR-IMATI Milan, it studies the cardiovascular fluid-dynamics within vitro models, aiming at supporting the clinical practice of vascular surgery and validating computational models. Indeed, the mission of the laboratory is to increase the clinical effectiveness of vascular surgical techniques.  
The laboratory is equipped with a pulse-duplicator able to reproduce the cardiac output or the pressure/flow characteristic in specific district of the vasculature.
- **Active-lab:** focused on SMA-actuated applications development and testing, but also devoted to other actuation types, the characterization of SMA actuators is performed to find the best solution for each application. For this purpose, testing benchmarks for SMA wires and springs have been developed, in order to characterize them as electrically powered actuators.  
The laboratory is equipped with a Z+ 20-10 power supply by TDK-Lambda, an EA-PS 3016-20 B power supply by EA Elektro-Automatik GmbH & Co., and with a high performance 6 ½ digits precision multimeter.

### **PATENTS UNDER EVALUATIONS:**

- P.Canzi, M.Benazzo, S.Marconi, F.Auricchio (Inventors and Applicants), “Ring cochlear implant introducer”

### **FILED PATENTS**

- D.Asprone, F.Auricchio, C.Menna (Inventors and Applicants), “Structure made of reinforced concrete and realization procedure through a 3D printing process”, Italian Patent n. 102016000077424, 2016
- U.Anselmi Tamburrini, F.Auricchio, S.Morganti (Inventors and Applicants), “Manufacture of ceramic objects”, PCT/EP2017/059932, WO 2018/196965
- P.Canzi, S.Marconi, F.Auricchio, M.Benazzo (Inventors and Applicants), “Temporal Bone Holder”, Italian Patent n. 102015000041482, 2015

#### GRANTED PATENTS:

- F.Sarchi, F.Ramaioli, G.Gusmano, F.Auricchio, F.Nanni, G.Forte (Inventors and Applicants), “Wireless structural health monitoring with elongated carbon fiber or matrix sensor”, European Patent n. WO2004IT00024 20040130, 2004
- F.Auricchio, R.Stanco, S.Pigazzani, Smarrita Camilla Design (Inventors and Applicants), “Networked structure and process and means for lifting and lowering the same”, European Patent n. WO2000IT00252 20000619, 2000

#### INVITED PRESENTATIONS TO INTERNATIONAL CONFERENCES AND/OR SCHOOLS (SINCE 2010):

- 2021 Invited/Plenary Lecture, 7th International Conference on Computational and Mathematical Biomedical Engineering (CMBE21). Milan (Italy), “to be defined”
- 2021 **Invited/Plenary Lecture**, Biomechanics: Challenges of the Next Decade, International Symposium in honor of Professor Gerhard A. Holzapfel’s 60th birthday, Graz (Austria), “to be defined”
- 2021 **Plenary Lecture**, 10<sup>th</sup> ICCSM, 10<sup>th</sup> International Congress of the Croatian Society of Mechanics, Pula (Croatia), “to be defined”
- 2020 **Plenary Lecture**, ICAST2020, 31<sup>st</sup> International Conference on Adaptive Structures and Technologies, Reggio Emilia (Italy), “to be defined”,
- 2020 XXXX, M&MoCS, Microstructures and Microarchitectures: Theoretical, Numerical and Experimental Aspects, Arpino (Italy), “to be defined”
- 2020 **Keynote Lecture**, mini-symposium on “Optimal Design of Mechanical Metamaterials and Bionic Structures, International Conference on Programmable Materials, Berlin (Germany), “Shape memory polymers: from constitutive modeling to 3D printing”
- 2021 **Plenary Lecture**, 14<sup>th</sup> World Congress on Computational Mechanics and 8<sup>th</sup> European Congress on Computational Methods in Applied Sciences and Engineering, Paris (France), “Additive manufacturing: opportunities and challenges”
- 2020 **Invited Lecture**, INdAM Workshop on "Mathematical Methods for Objects Reconstruction: from 3D Vision to 3D Printing", Rome (Italy), “Additive Manufacturing: from the concept to the component production. Modeling and computational challenges!!”
- 2019 **Invited Lecture**, XVIII Congresso Nazionale Società Italiana di Chirurgia Vascolare ed Endovascolare, Firenze (Italy), “La stampa 3d nel trattamento della patologie aortiche complesse”,
- 2019 **Plenary Lecture**, EMI-2019, Engineering Mechanics Institute International Conference, Lyon, Villeurbanne (France), “Additive Manufacturing: modeling and computational challenges!!”
- 2019 **Invited Lecture**, RAMSS-2019, Recent Advances in Mechanics of Solids and Structures, Trento (Italy), “Additive Manufacturing: modeling and computational challenges!!”
- 2019 **Invited lecture**, International Workshop on Recent advances in Phase-Field modeling: from Engineering to Biology, Pavia (Italy), “Additive Manufacturing Graded-material Design based on Phase-field and Topology Optimization”
- 2019 **Invited Lecture**, High Order Finite Elements and Isogeometric Methods (HOFEIM), Pavia (Italy), “Advanced numerical methods in additive manufacturing applications”
- 2019 **Invited Lecture**, 106<sup>o</sup> Congresso Nazionale Società Italiana di Otorinolaringologia e Chirurgia Cervico-Facciale (SIOeChCF), Rimini (Italy), “Highlights of 3D printing technology: applications in head and neck surgery”
- 2019 **Invited Lecture**, Mathematical modeling and Analysis of degradation and restoration in Cultural Heritage, INdAM Workshop MACH2019, Roma (Italy) “Additive Manufacturing: modeling and computational challenges!!”

- 2018 **Invited Lecture**, Kármán Conference on Additive Fabrication of Interactive Material Systems, Colone (Germany)
- 2018 **Plenary Lecture**, First International Conference on Mechanics of Advanced Materials and Structures, Torino (Italy), “Additive Manufacturing: materials and computational mechanics”
- 2018 **Invited Lecture**, Workshop on Special Materials and Complex Systems, “Additive Manufacturing: a whole set of open problems to be solved !!”, Gargnano (Italy)
- 2017 **Keynote speech**, IEEE "Forum on Research and Technologies for Society and Industry", thematic session on “Digital Fabrication & Digital Manufacturing”, Modena (Italy), “Additive manufacturing: from prototypes to products”
- 2017 **Plenary Lecture**, IMWS-AMP 2017, IEEE MTT-S International Microwave Workshop Series on Advanced Materials and Processes, Pavia (Italy), “The magic world of 3D printing”
- 2017 **Plenary Lecture**, VII International Conference on Coupled Problems in Science and Engineering, Rodes (Greece), “Micro and macro simulations of additive manufacturing processes”
- 2017 **Invited Lecture**, Maths from the Body, Workshop, Brescia (Italy), “Virtual endograft deployment in the thoracic aorta as predictor of TEVAR migration”
- 2017 **Invited Lecture**, Mathematical Modeling for the Circulatory System Models, Equations, Applications, Verona (Italy), “An advanced example of computer aided clinical trial: the iCardioCloud Project”
- 2017 **Invited Lecture**, Stampa 3D in Medicina: regole, tutele, mercato e formazione, Bologna (Italy), “Stampa 3D in Chirurgia Generale e Chirurgia Vascolare”
- 2017 **Invited Lecture**, Symposium on Integrated Data Assimilation, within SimTech Cluster of Excellence, Stuttgart (Germany), “3D PRINTING: a bridge to the future with many open (computational) issues”
- 2016 **Invited Lecture**, Ordine degli Ingegneri di Pavia, Pavia (Italy), “Stampanti 3D. Una tecnologia abilitante con applicazioni dal manifatturiero avanzato alla chirurgia”
- 2016 **Invited Lecture**, Giornata di Studio Leghe a Memoria di Forma: materiali per l’innovazione di prodotti biomedicali e industriali, Milano (Italy), “Modellazione costitutiva ed implementazione numerica: effetto memoria di forma, superelasticità e simulazione di dispositivi SMA”
- 2016 **Plenary Lecture**, GIMC 2016, XXI Italian Conference on Computational Mechanics, Lucca (Italy) “3D printing: a bridge to the future”
- 2016 **Invited Instructional Lecture Sessions**, 17<sup>th</sup> EFORT Congress, Geneva (Switzerland), “3D Printing: Clinical Applications In Orthopaedics And Traumatology”
- 2016 **Plenary Lecture**, MAFELAP 2016, 15<sup>th</sup> Conference on the Mathematics of Finite Elements and Applications, Brunel University, UK
- 2016 **Invited Lecture**, 2016 International Workshop on Multiscale Innovative Materials and Structures (MIMS16), Cetara, Salerno, Italy, “The use of 3D Printing for the development of Innovative Materials and Structures”
- 2015 **Plenary Lecture**, International Conference on Biomedical Technology 2015, Hannover (Germany) “Simulation of endovascular surgery: from medical images to clinical reality through computational and experimental biomechanics”
- 2015 **Invited Lecture**, 117<sup>o</sup> Congresso Nazionale della Società Italiana di Chirurgia, Milano (Italy), “Stampanti 3D”
- 2015 **Invited Lecture**, XIV Congresso Nazionale della Società Italiana di Chirurgia Vascolare ed Endovascolare, Milano (Italy), “Ricerca traslazionale”
- 2015 **Invited Lecture**, PRIN meeting on Cardiovascular Modeling, Politecnico di Milano (Italy), “Prediction of EVAR outcome by means of computational models and validation”
- 2015 **Plenary Lecture**, 7th ECCOMAS Thematic Conference on Smart Structures and Materials, “Shape memory alloys: from recent modeling proposals to cardiovascular device simulations”
- 2015 **Plenary Lecture**, 86<sup>th</sup> Annual Meeting of GAMM (International Association of Applied Mathematics and Mechanics)
- 2014 **Invited Lecture**, MAC 2014, 4th Munich Aortic and Carotid Conference, Munich (Germany), “Prediction of EVAR outcome by means of computational models”
- 2013 **Invited Lecture**, Euromech 548 Innovations in Mechanics and in Civil Engineering, Amboise (France), “Shape-Memory Alloys: 3D Constitutive Modeling and Biomedical Device Investigation”
- 2013 **Keynote Lecture**, Coupled Problems 2013, Ibiza (Spain), “On strong imposition of Dirichlet boundary conditions in unfitted finite element methods with application to fluid dynamics”
- 2012 **Semi-Plenary**, 6th European Congress on Computational Methods in Applied Sciences and

- Engineering (ECCOMAS), Vienna (Austria), “Approximations of incompressible large deformation elastic problems: some unresolved issues!”
- 2012 **Keynote Lecture**, MSE 2012, Darmstadt (Germany), Symposium “A6 - Modern Aspects in Structural Phase Transformations”, “Shape Memory Alloys: some recent developments on 3D constitutive modeling and biomedical device investigation”
- 2012 **Invited series of lectures**, “Modelli e metodi computazionali per materiali innovative con applicazione alle leghe a memoria di forma”, Università di Napoli Federico II, Napoli (Italy)
- 2012 **Invited Lecture**, MIMES, Gruppo di Lavoro AIAS MIMEMS “Materiali Intelligenti e MEMS”, “Recenti sviluppi modellistici per attuatori”
- 2012 **Plenary Lecture**, ESMC 2012, 8th European Solid Mechanics Conference, Graz (Austria), “Shape-Memory Alloys: 3D Constitutive Modeling and Biomedical Device Investigation”
- 2012 **Invited Lecture**, Advanced Computational Engineering Workshop, Mathematisches Forschungsinstitut Oberwolfach, Oberwolfach (Germany), “Approximations of incompressible large deformation elastic problems: some unresolved issues!”
- 2011 **Invited Lecture**, ASME 2011 Conference on Smart Materials Adaptive Structures and Intelligent Systems, Scottsdale, Arizona (USA), “Recent Developments on the 3D Modeling of SMA”
- 2011 **Keynote Lecture**, ECCOMAS Thematic Conference: COMPDYN 2011, 3rd International Conference on Computational Methods in Structural Dynamics & Earthquake Engineering, Corfu (Greece), “Elasticity and elasto-plasticity 2D problems addressed via a novel finite particle formulation”
- 2010 **Invited Lecture**, AIM 2010, Brescia, “Shape-memory alloys: effective 3D modeling, computational aspects and analysis of actuator and biomedical devices”
- 2010 **Invited Lecture**, So.pa.chi.va.la.me. 2010, Napoli, “Computer-based simulation of carotid artery stenting: a first step towards a virtual procedure planning”
- 2010 **Keynote Lecture**, Smart Structural System Technologies (S3T), Porto (Portugal), “On the constitutive modeling and numerical implementation of shape memory alloys under multiaxial loadings - Part I: Constitutive model development at small and finite strains”
- 2010 **Invited Lecture**, Smart Structural System Technologies (S3T), Porto (Portugal), “On the constitutive modeling and numerical implementation of shape memory alloys under multiaxial loadings - Part II: numerical implementation and simulations”
- 2010 **Invited Lecture**, First joint Workshop Polimeri Europa and Engineering Faculty of the University of Pavia, Mantova (Italy), “On some current activities in computational mechanics and advanced materials modeling”
- 2010 **Semi-plenary Lecture**, 4th European Conference on Computational Mechanics (Solids, Structures and Coupled Problems in Engineering), Paris (France), “Shape-memory alloys: effective 3D modeling, computational aspects and biomedical device analysis”

#### **INVITED LECTURES AND/OR SEMINARS (SINCE 2010):**

- 2021 “3D printing: a world of opportunities”, within the “Seminari Carlo Emanuele e Maria Rosa Tiscornia”, Department of Civil, Chemical and Environmental Engineering (DICCA), University of Genova, Genova (Italy)
- 2021 “3D printing: overview of its clinical application in surgery”, **Joint Challenge 2021**, Cernobbio (Italy)
- 2021 “Additive Manufacturing. A world full of opportunities and challenges!!”, invited Colloquium at SSM - School for Advanced Studies of Napoli (webinar)
- 2021 “Additive Manufacturing. A world full of opportunities and challenges!!”, Institut de mécanique et d'ingénierie, Département de Ingénierie Mécanique et Conception, École Nationale Supérieure d'Arts et Métiers, France (webinar)
- 2021 “Simulation for additive manufacturing: opportunities and challenges”, 1st Winter School on “Trends on Additive Manufacturing for Engineering Applications”, Polytechnical University of Timișoara (UPT) Timisoara, Romania (webinar)
- 2020 “Industria 4.0 per la ripartenza - Focus Additive Manufacturing”, Assolombarda (webinar)
- 2020 “La stampa 3D: tecnologia abilitante oggi, tecnologia produttiva domani. Dalla progettazione alla produzione” within the Master ANIE per Industria 4.0 (webinar)
- 2020 “Additive Manufacturing: modeling and computational challenges!”, Department of Mathematica, University of Napoli “Federico II”, Napoli (Italy)

- 2019 “Simulazione e ottimizzazione dei componenti ottenuti con tecnologia additiva”, workshop on *Additive Manufacturing nel settore aerospaziale*, organized by Lombardia Aerospace Cluster, Pavia (Italy)
- 2019 “Additive Manufacturing: modeling and structural optimization procedures!!”, Dipartimento di Ingegneria Civile, Ambientale e Meccanica, Università di Trento, Trento (Italy)
- 2019 “Applicazioni delle tecnologie additive nel settore biomedicale” AITA, Cinisello Balsamo (Italy)
- 2018 “Shape Memory Alloys. Part 1: An introduction to shape memory alloys: material response, applications, and simple constitutive modeling”, ILT Fraunhofer, Aachen (Germany)
- 2018 “Shape memory alloys. Part 2: advanced constitutive modeling and numerical simulations of devices”, ILT Fraunhofer, Aachen (Germany)
- 2018 “Protolab Activities: from Medical Field to Mechanical Characterization ... up to Numerical Simulations, ILT Fraunhofer, Aachen (Germany)
- 2017 “3D Printing: some experimental and computational investigations”, EU Regional School 2017 in Computational Engineering Science, AICES Institute, RWTH Aachen, Germany,
- 2015 “Mechanics of Solids: from beam theory to rapid prototyping for surgery planning”, Università di Napoli Federico II, Napoli (Italy),
- 2014 “Shape-Memory Alloys: 3D Constitutive Modeling and Biomedical Device Investigation”, Laboratoire de Mécanique des Solides, Ecole Polytechnique, Paris (France),

#### **ORGANIZATION OF INTERNATIONAL & NATIONAL CONFERENCES:**

- 2021 SIM-AM, International Conference on Simulation for Additive Manufacturing, ECCOMAS Thematic Conference, Glasgow (Great Britain)
- 2019 SIM-AM, International Conference on Simulation for Additive Manufacturing, ECCOMAS Thematic Conference, Pavia (Italy)
- 2018 IDBN Second Conference of the Italian Digital Biomanufacturing Network, Pavia (Italy)
- 2017 IDBN Second Conference of the Italian Digital Biomanufacturing Network, Bologna (Italy)
- 2017 SIM-AM, International Conference on Simulation for Additive Manufacturing, ECCOMAS Thematic Conference, Munich (Germany)
- 2017 IGA, International Conference on Isogeometric Analysis, ECCOMAS Thematic Conference, Pavia (Italy)
- 2015 PLAST, Conference on Stampa 3D nel medicale: tecnologie, applicazioni ed aspetti regolatori, Milano (Italy)
- 2015 3D-PRINTHUB, 1<sup>st</sup> 3D Printing Italian Meeting in Medical and in Orthopedics and Traumatology, Milano (Italy)
- 2011 SMART, ECCOMAS Thematic Conference on Smart Structures and Materials, Saarbrücken (Germany)
- 2009 MULTIMAT, Numerical Methods for Multi-Material Fluids and Structures, Pavia (Italy)
- 2008 WCCM-ECCOMAS, 8<sup>th</sup> World Congress on Computational Mechanics and 5<sup>th</sup> European Congress on Computational Methods in Applied Sciences and Engineering, Venice (Italy)
- 2008 SMST, International Conference on Shape Memory and Superelastic Technologies, Stresa (Italy)
- 2006 SMARTeR, Shape Memory Alloys to Regulate Transient Responses in civil engineering, Pavia (Italy)
- 2000 ESOMAT, 5<sup>th</sup> European symposium on martensitic transformations and shape memory alloys, Como (Italy)

#### **ORGANIZATION OF SESSION OR MINI-SYMPOSIUM IN INTERNATIONAL & NATIONAL CONFERENCES (SELECTED):**

- 2020 ICTAM, 25th International Congress of Theoretical and Applied Mechanics, Milan (Italy), co-chair of the mini-symposium on “Mechanics of Additive Manufacturing”
- 2019 Conference on Automation Innovation in Construction (CIAC2019), Leiria, Portugal
- 2018 XX Congresso IORS-Italian Orthopedic Research Society, La medicina di precisione e l’Ortopedia, Pavia (Italy), session on “3D printing and design of prosthesis implants”
- 2018 WCCM, 13th World Congress on Computational Mechanics, New York City (USA), mini-symposium on “Modeling and Simulation for Additive Manufacturing”
- 2017 IEEE MTT-S International Microwave Workshop Series on Advanced Materials and Processes, Pavia (Italy), mini-symposium on “Additive Manufacturing: innovative materials and applications”

- 2017 ICBT, International Conference on Biomedical Technology, Hannover (Germany), mini-symposium on “Simulations for cardiovascular diagnosis and treatment: from computer through devices to bedside”
- 2017 COMPLAS, 14th International Conference on Computational Plasticity, Barcelona (Spain), mini-symposium on “Computational Biomechanics”
- 2017 SIAM, Conference on Computational Science and Engineering, Atlanta (GE, USA)
- 2016 ECCOMAS Congress, Crete (Greece), Mini-symposium on “Simulation of Cardiovascular Procedures and Devices” European Congress on Computational Methods in Applied Sciences and Engineering
- 2012 ICTAM, 23<sup>rd</sup> International Congress of Theoretical and Applied Mechanics, Beijing (China), co-chair with prof. Eliot Fried (McGill University, Canada) for the Pre-Nominated Session (PNS) on “Mechanics of phase transformations”
- 2011 COMPDYN, 3rd International Conference on Computational Methods in Structural Dynamics & Earthquake Engineering, Corfù (Greece), Minisymposium on “Meshless Methods”

**SCIENTIFIC BOARD OF INTERNATIONAL CONFERENCES (SINCE 2010):**

- 2022 ICoNSoM, 2<sup>nd</sup> International Conference on Nonlinear Solid Mechanics, Alghero, Italy
- 2021 AMMM, International Conference on “Additive Manufacturing Meets Medicine”, Lübeck, Germany
- 2021 ICCSM, 10<sup>th</sup> International Congress of the Croatian Society of Mechanics, Pula, Croatia
- 2021 CMBE, 7<sup>th</sup> International Conference on Computational and Mathematical Biomedical Engineering, Milano (Italy)
- 2020 SIRAMM, School on Structural Integrity and Reliability of Advanced Materials obtained through Additive Manufacturing, Timisoara (Romania)
- 2020 AMMM, International Conference on “Additive Manufacturing Meets Medicine”, Lübeck, Germany
- 2020 WCCM-ECCOMAS, 14th World Congress in Computational Mechanics and ECCOMAS Congress, Paris (France)
- 2019 ICBT, International Conference on Biomedical Technology, Hannover (Germany)
- 2019 AMMM, International Conference on “Additive Manufacturing Meets Medicine”, Lübeck, Germany
- 2019 IUTAM Symposium on “Phase Transformation in Shape Memory Materials: Modeling and Applications” Austin (USA)
- 2019 FEF, 20<sup>th</sup> International Conference on Finite Elements in Flow Problems, member of the Additive Manufacturing sub-Committee, Chicago (USA).
- 2019 CMBE, 6<sup>th</sup> International Conference on Computational and Mathematical Biomedical Engineering, Sendai City (Japan)
- 2019 COMPLAS, 15<sup>th</sup> International Conference on Computational Plasticity, Barcelona (Spain)
- 2019 COUPLED, 8<sup>th</sup> International Conference on Computational Methods for Coupled Problems in Science and Engineering, Sitges (Spain)
- 2018 WCCM, 13th World Congress on Computational Mechanics, New York City (USA)
- 2018 XX Congresso IORS-Italian Orthopedic Research Society, La medicina di precisione e l’Ortopedia, Pavia (Italy)
- 2018 ICOMP, 3<sup>rd</sup> International Conference on Computational Methods in Manufacturing Processes, Barcelona (Spain)
- 2018 ECCM 6 & ECFD 7, 6<sup>th</sup> European Conference on Computational Mechanics (Solids, Structures and Coupled Problems) and 7<sup>th</sup> European Conference on Computational Fluid Dynamics – Glasgow (Scotland, UK)
- 2017 IEEE MTT-S, International Microwave Workshop Series on Advanced Materials and Processes, Technical Program Committee Member, Pavia (Italy)
- 2017 CSMA, French National Workshop on Structural Computation, Giens Peninsula (France)
- 2017 ICBT, International Conference on Biomedical Technology, Hannover (Germany)
- 2017 CMBE, 5<sup>th</sup> International Conference on Computational and Mathematical Biomedical Engineering, University of Pittsburgh, Pennsylvania (USA)
- 2017 SMART, 8<sup>th</sup> ECCOMAS Thematic Conference on Smart Structures and Materials, Madrid (Spain)
- 2016 10th International Conference on Mechanics of Time Dependent Materials, Paris (France)
- 2016 CIMTEC, 5<sup>th</sup> International Conference “Smart and Multifunctional Materials, Devices, Structures”, International Advisory Board of Symposium B “State-of-the-art Research and Applications of Shape Memory Alloys”, Perugia (Italy)
- 2015 PANACM, Pan-American Congress on Computational Mechanics, Buenos Aires (Argentina)

- 2015 ICCB, VI International Conference on Computational Bioengineering, Barcelona (Spain)
- 2015 CSMA, French National Conference in Computational Structural Mechanics, Giens Peninsula (France)
- 2014 MAC, 4<sup>th</sup> Munich Aortic and Carotid Conference, Munich (Germany)
- 2013 SEECM III, III South-East European Conference<sup>[1]</sup> on Computational Mechanics, Kos (Greece)
- 2013 SMST, European SMST (Shape Memory and Superelastic Technologies) Conference, Prague (Czech Republic)
- 2012 WCCM, 10<sup>th</sup> World Congress on Computational Mechanics, Sao Paulo (Brazil)
- 2012 CIMTEC, 4<sup>th</sup> International Conference on “Smart Materials, Structures and Systems”, Advisory Board of Symposium B “State-of-the-Art Research and Application of SMAs Technologies”, Montecatini Terme (Italy)
- 2012 YIC, First European Community on Computational Methods in Applied Sciences (ECCOMAS) Young Investigators Conference, Aveiro (Portugal)
- 2011 TCCM, Trends & Challenges in Computational Mechanics, Padova (Italy)
- 2011 SMART, 5<sup>th</sup> ECCOMAS Thematic Conference on Smart Structures and Materials, Saarbrucken (Germany)
- 2011 ASEM, World Congress on Advances in Structural Engineering and Mechanics, Seoul (Korea)
- 2011 COMPDYN, Computational Methods in Structural Dynamics and Earthquake Engineering, Corfu (Greece)
- 2010 GIMC, XVIII Convegno Italiano di Meccanica Computazionale, Siracusa (Italy)
- 2010 S3T, Smart Structural Systems Technologies, Porto (Portugal)
- 2010 Tenth International Conference on Computational Structures Technology, Valencia (Spain)

#### **OTHER ACCOMPLISHMENTS:**

- Member of the Selection Committee for JC Simo award for young investigators within the Spanish Association for Numerical Methods in Engineering (2020)
- Member of the committee for the Universitat Politècnica de Catalunya (Spain) for the selection process in the framework of the Serra Hünter Programme (2019) for three tenure-elegible positions in the Department of Civil and Environmental Engineering
- Faculty member at the event “XVIII Congresso Nazionale Società Italiana di Chirurgia Vascolare ed Endovascolare” Firenze, October 2019
- Faculty member at the event “Advanced TEVAR Symposium” Università di Milano, Milano, March 2019
- Founder member of the Italian Digital Biomanufacturing Network (IDBN), June 2015
- Participation member at the Round Table on “Health, Environment and lifestyles: Is Italy a champion in sustainable wellness?” organized by the Italian Aspen Institute, July 2014, Brescia
- Adjunct Professor, Department of Engineering Mathematics and Internetworking, Faculty of Engineering, Dalhousie University, Canada, 2010
- Adjunct Professor, Faculty of Graduate Studies at Dalhousie, Dalhousie University, Canada, 2010
- Guest Editor for a special issue of "International Journal for Numerical Methods in Fluids" (with dr. Guglielmo Scovazzi, Sandia National Laboratories, USA) collecting contributions from the conference "Numerical Methods for Multimaterial Flows and Structures" held in Pavia, Italy, 2009
- Lectio Magistralis for the Laurea Honoris Causa in Civil Engineering given by University of Pavia to professor Thomas J.R. Hughes, Pavia, Italy, September 24, 2007
- Semifinalist to the 6<sup>th</sup> Robert J. Melosh Medal Competition for the “Best student paper on finite-element analysis”, Duke University (USA) 1994. Invited to give a lecture at Duke University on “A triangular thick plate with an exact thin limit”, 1994

## PUBLICATIONS ON INTERNATIONAL JOURNALS

1. A. Viguerie, G. Lorenzo, F. Auricchio, D. Baroli, T.J.R. Hughes, A. Patton, A. Reali, T.E. Yankeelov, A. Veneziani. "Simulating the spread of COVID-19 via a spatially-resolved susceptible–exposed–infected–recovered–deceased (SEIRD) model with heterogeneous diffusion", *Applied Mathematics Letters*, 111: 106617 (2021)
2. A. Finotello, R.M. 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)
3. E. López-Oliver, C. Tomassoni, L. Silvestri, M. Bozzi, L. Perregrini, S. Marconi, G. Alaimo, F. Auricchio. "3-D-Printed Compact Bandpass Filters Based on Conical Posts", *IEEE Transactions on Microwave Theory and Techniques*, 69 (1): 616-628 (2021)
4. 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. Reimbers, F. Bedogni. "Outcome of transcatheter aortic valve replacement in bicuspid aortic valve stenosis with new-generation devices", *Interactive Cardiovascular and Thoracic Surgery*, 32 (1): 20-28 (2021)
5. E. Lanzarone, A. Finotello, B. Pane, G. Pratesi, D. Palombo, M. Conti, G. Spinella. "Prediction Model of Isolated Iliac and Abdominal Aneurysms", *European Journal of Clinical Investigation*, e13517 (2021)
6. A. Finotello, G. Spinella, G. Notini, D. Palombo, G. Pratesi, S. Mambrini, F. Auricchio, M. Conti, B. Pane. "Geometric Analysis to Determine Kinking and Shortening of Bridging Stents After Branched Endovascular Aortic Repair", *CardioVascular and Interventional Radiology* (2021)
7. G.M. Rocco, N. Delmonte, D. Schreurs, S. Marconi, F. Auricchio, M. Bozzi. "3D-printed pumpkin-shaped cavity resonator to determine the complex permittivity of liquids", *Microwave and Optical Technology Letters*, 63 (4): 1061-1066 (2021)
8. 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)
9. V. Mercuri, G. Balduzzi, D. Asprone, F. Auricchio. "Structural analysis of non-prismatic beams: Critical issues, accurate stress recovery, and analytical definition of the Finite Element (FE) stiffness matrix", *Engineering Structures*, 2013: 110252 (2020)
10. L. Casagrande, L. Esposito, C. Menna, D. Asprone, F. Auricchio. "Effect of testing procedures on buildability properties of 3D-printable concrete", *Construction and Building Materials*, 245: 118286 (2020)
11. A. Viguerie, S. Bertoluzza, F. Auricchio. "A Fat boundary-type method for localized nonhomogeneous material problems", *Computer Methods in Applied Mechanics and Engineering*, 364: 112983 (2020)
12. E.S. Keneth, G. Scalet, M. Layani, G. Tibi, A. Degani, F. Auricchio, S. Magdassi. "Pre-Programmed Tri-Layer Electro-Thermal Actuators Composed of Shape Memory Polymer and Carbon Nanotubes", *Soft Robotics*, 7 (2): 123-129 (2020)
13. V.M. Belvroy, R.M. Romarowski, T.M.J. van Bakel, J.A. van Herwaarden, J. Bismuth, F. Auricchio, F.L. Moll, S. Trimarchi. "Impact of Aortic Tortuosity on Displacement Forces in Descending Thoracic Aortic Aneurysms", *European Journal of Vascular and Endovascular Surgery*, 59 (4): 557-564 (2020)
14. A. Finotello, E. Faggiano, M. Conti, G. Spinella, B. Pane, D. Palombo, F. Auricchio. "Medical image analysis to measure the follow-up geometry of thoraco-abdominal aortic aneurysms treated with multilayer flow modulator stent", *Computer Methods in Biomechanics and*

- Biomedical Engineering: Imaging and Visualization, 8 (2): 126-133 (2020)
15. 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 the complete double aortic arch in the adult", *Journal of Cardiac Surgery*, 35 (3): 716-720 (2020)
  16. P. Canzi, P. Capaccio, S. Marconi, G. Conte, L. Preda, I. Avato, F. Aprile, M. Gaffuri, A. Occhini, L. Pignataro, F. Auricchio, M. Benazzo. "Feasibility of 3D printed salivary duct models for sialendoscopic skills training: preliminary report", *European Archives of Oto-Rhino-Laryngology*, 277 (3): 909-915 (2020)
  17. E.S. Keneth, R. Lieberman, M. Rednor, G. Scalet, F. Auricchio, S. Magdassi. "Multi-material 3D printed shape memory polymer with tunable melting and glass transition temperature activated by heat or light", *Polymers*, 12 (3): 710 (2020)
  18. G.M. Rocco, M. Bozzi, D. Schreurs, L. Perregriani, S. Marconi, G. Alaimo, F. Auricchio. "3-D Printed Microfluidic Sensor in SIW Technology for Liquids' Characterization", *IEEE Transactions on Microwave Theory and Techniques*, 68 (3): 8935528, 1175-1184 (2020)
  19. A. Vigliotti, F. Auricchio. "Automatic Differentiation for Solid Mechanics", *Archives of Computational Methods in Engineering* (2020), doi: 10.1007/s11831-019-09396-y
  20. N. Inverardi, S. Pandini, F. Bignotti, G. Scalet, S. Marconi, F. Auricchio. "Sequential Motion of 4D Printed Photopolymers with Broad Glass Transition", *Macromolecular Materials and Engineering*, 305 (1): 1900370 (2020)
  21. S. Pandini, N. Inverardi, G. Scalet, D. Battini, F. Bignotti, S. Marconi, F. Auricchio. "Shape memory response and hierarchical motion capabilities of 4D printed auxetic structures", *Mechanics Research Communications*, 103: 103463 (2020)
  22. A. Pietrabissa, S. Marconi, E. Negrello, V. Mauri, A. Peri, L. Pugliese, E.M. Marone, F. Auricchio. "An overview on 3D printing for abdominal surgery", *Surgical Endoscopy*, 34 (1) (2020)
  23. G. Spinella, A. Finotello, F.R. Pisa, M. Conti, S. Mambrini, G. Pratesi, F. Auricchio, D. Palombo, B. Pane. "Geometrical Evaluation of Aortic Sac Remodeling During Two-Step Thoracoabdominal Aortic Aneurysm Endovascular Repair", *Annals of Vascular Surgery*, 67: 43-51 (2020)
  24. S. Pisani, R. Dorati, F. Scocozza, C. Mariotti, E. Chiesa, G. Bruni, I. Genta, F. Auricchio, M. Conti, B. Conti. "Preliminary investigation on a new natural based poly(gamma-glutamic acid)/Chitosan bioink", *Journal of Biomedical Materials Research - Part B Applied Biomaterials*, 108 (7): 2718-2732 (2020)
  25. F. Nappi, L. Mazzocchi, I. Timofeva, L. MacRon, S. Morganti, S.S.A. Singh, D. Attias, A. Congedo, F. Auricchio. "A finite element analysis study from 3D CT to predict transcatheter heart valve thrombosis", *Diagnostics*, 10 (4): 183 (2020)
  26. P. Canzi, I. Avato, S. Marconi, M. Del Maestro, A.G. Lucifero, M. Magnetto, E. Carlotto, F. Auricchio, S. Luzzi, M. Benazzo. "A 3D printed custom-made mask model for frameless neuronavigation during retrosigmoid craniotomy. A preclinical cadaveric feasibility study", *Annali italiani di chirurgia*, 9 (2020)
  27. E.M. Marone, L.F. Rinaldi, M. Conti, S. Marconi, F. Auricchio, A. Pietrabissa, G. Basile. "Three-Dimensional Printed Models Can Help Settle Malpractice Litigation Over Surgical Interventions", *Annals of Vascular Surgery*, 65: e292-e294 (2020)
  28. S.C. Divi, C.V. Verhoosel, F. Auricchio, A. Reali, E.H. van Brummelen. "Error-estimate-based adaptive integration for immersed isogeometric analysis", *Computers and Mathematics with Applications*, 80 (11): 2481-2516 (2020)
  29. F. Auricchio, E. Bonetti, M. Carraturo, D. Hömberg, A. Reali, E. Rocca. "A phase-field based graded-material topology optimization with stress constraint", *Mathematical Models and Methods in Applied Sciences*, 30 (8): 1461-1483 (2020)
  30. A. Viguerie, A. Veneziani, G. Lorenzo, D. Baroli, N. Aretz-Nellesen, A. Patton, T.E. Yankeelov, A. Reali, T.J.R. Hughes, F. Auricchio. "Diffusion-reaction compartmental models

- formulated in a continuum mechanics framework: application to COVID-19, mathematical analysis, and numerical study”, *Computational Mechanics*, 66: 1131-1152 (2020)
31. C. Spadaccio, L. Mazzocchi, I. Timofeva, L. Macron, C.N. De Cecco, S. Morganti, F. Auricchio, F. Nappi. “Bioengineering case study to evaluate complications of adverse anatomy of aortic root in transcatheter aortic valve replacement: Combining biomechanical modelling with CT imaging”, *Bioengineering*, 7 (4): 1-10 (2020)
  32. M. Carraturo, J. Jomo, S. Kollmansberger, A. Reali, F. Auricchio, E. Rank. “Modeling and experimental validation of an immersed thermo-mechanical part-scale analysis for laser powder bed fusion processes”, *Additive Manufacturing*, 36: 101498 (2020)
  33. M. Conti, A. Ferrarini, A. Finotello, G. Salsano, F. Auricchio, D. Palombo, G. Spinella, B. Pane. “Patient-specific computational fluid dynamics of femoro-popliteal stent-graft thrombosis”, *Medical Engineering and Physics*, 86: 57-64 (2020)
  34. H. Garcia-Martinez, E. Avila-Navarro, G. Torregrosa-Penalva, N. Delmonte, L. Silvestri, S. Marconi, G. Alaimo, F. Auricchio, M. Bozzi. “Design and fabrication of a band-pass filter with ebg single-ridge waveguide using additive manufacturing techniques”, *IEEE Transactions on Microwave Theory and Techniques*, 68 (10): 4361-4368 (2020)
  35. A. Fantazzini, M. Esposito, A. Finotello, F. Auricchio, B. Pane, C. Basso, G. Spinella, M. Conti. “3D Automatic Segmentation of Aortic Computed Tomography Angiography Combining Multi-View 2D Convolutional Neural Networks”, *Cardiovascular Engineering and Technology*, 11 (5): 576-586 (2020)
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