FERDINANDO AURICCHIO
CURRICULUM VITAE

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

Email : **auricchio@unipv.it**
Personal Web-page: **www.unipv.it/auricchio**
Group Web-page: **www.unipv.it/compmech**

RESEARCH UNIQUE IDENTIFIER:
ResearcherID: B-9405-2009
Orcid: https://orcid.org/0000-0002-3735-2400

SCIENTIFIC PRODUCTION:

- **198 publications on referred International Journals**
- **5 book chapters**
- **4 patents**
- **H-Index: 35** according to **ISI Web of Knowledge**; **41** according to **Scopus**
- **Citations: 4163** according to **ISI Web of Knowledge**; **5032** according to **Scopus**
- **Citations excluding self-citations: 3746** according to **ISI Web of Knowledge**; **4111** according to **Scopus**

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 270, Scopus 298**
- 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 189, Scopus 212**
- 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 152, Scopus 203**
- F. Auricchio, L. Petrini. "A three-dimensional model describing stress-temperature induced solid phase transformations: solution algorithm and boundary value problems", International Journal for Numerical Methods in Engineering, 61 (1): 807-836 (2004). **Citations: ISI 135, Scopus 138**
- 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 125, Scopus 138**

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 AND HONORS:

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

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 2015 **Proponent and coordinator** of one of the five strategic thematic groups of the University of Pavia on "**3D@UniPV**: Virtual Modeling and Additive Manufacturing (3D printing) for Advanced Materials" (http://www.unipv.it/3d)

Since 2015 **Director** of the "**Computational Mechanics and Advanced Materials**" joint Center, between University of Pavia and University of Napoli Federico II

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

2015 **Member** of the **Steering Committee** for the Thematic Group: **GTTS 1 System for personalized manufacturing** within the cluster **"Smart Industry"**

2015 **Representative** of **University of Pavia** within the cluster **"Smart Industry"**

2015 **Member** of the **"Additive Manufacturing"** Thematic Group **Steering Committee** within the Lombardy Association for Smart Industry (AFIL)

2015 **President** of 1st 3D Printing Italian Meeting in Medical and in Orthopedy and Traumatology, 3DPrintHub – fieramilanocity.

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

Since 2014 **Coordinator** of the **Ph.D. Program in "Civil Engineering and Architecture"** (University of Pavia)

2014 **Member** of the Scientific Committee of the MAC 2014 (4th Munich Aortic and Carotid Conference)

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

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

2013-2016 **Member** of the **Academic Senate** (University of Pavia)
2013 **External referee** of the ERC Consolidator Grant 2013 project proposals
Since 2012 **Department Chair** (Department of Civil Engineering and Architecture)
Since 2011 **Member** of the **European Society of Biomechanics**
2011-2014 **Member** of the Committee for the **Evaluation of the Italian University and Research System** (VQR 2004-2010)
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)
Since 2010 **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"
Since 2010 **Reviewer** for **ESF** (European Science Foundation)
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 **Scientific Committee Member** 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 2016 Editorial Board member for the **International Journal of Plasticity**
Since 2014 Editorial Advisory Board member for the **Journal of Structural Mechanics** (previously Finnish Journal "Rakenteiden Mekaniikka")
2014-2016 Editorial Advisory Board member for "**Curved and Layered Structures**"
Since 2013 Editorial Board member for "**Journal of Computational Bioengineering**"
Since 2012 Advisory Editorial 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**"
2011-2015 Corresponding Editor for "**Computer Modeling in Engineering & Sciences**"
Since 2010 Editorial Board Member for "**Computer Methods in Applied Mechanics in Engineering**"
Since 2009 Editorial Board Member for "**Annals of Solid and Structural Mechanics**"
Since 2004 Advisory board Member for "**International Journal for Numerical Methods in Engineering**"

ACTIVE RESEARCH GRANTS:

2016-2019 "Pancreatic ductal adenocarcinoma (PDAC): development of a new communication platform between radiologists, surgeons and pathologists based on the 3D virtual and physical reconstruction of the tumor mass and the pancreas", funded by **Italian Department of Health**, unit leader
2016-2018 "New Materials and Technologies for Stereo lithography 3D printing", funded by **Regione Lombardia & INSTM**, project leader
2015-2018 "A multidisciplinary investigation for the improvement of aortic endografting: from biomedical engineering concepts to clinical implementation", funded by **Italian Department of Health**, unit leader
2015-2018 "3D@UniPV: Virtual Modeling and Additive Manufacturing (3D printing) for Advanced Materials", **University of Pavia** (no budget)

PAST RESEARCH GRANTS:

2014-2016 "iCardioCloud. Bringing cardiovascular virtual reality to clinical bedside practice through cloud platform: implementation of a US excellence paradigm into Lombardia SSR", funded by **Regione Lombardia and Fondazione Cariplo**, project leader

2016 "Fab@Hospital for bone plate fabrication and patient anatomy reconstruction using rapid prototyping technologies", funded by **CNR** (**National Research Council**), unit leader

2013-2016 "Advanced mechanical modeling of new materials and technologies for the solution of 2020 European challenges", funded by **MIUR (Italian Department of University Research)**, project leader

2014 "Fab@Hospital. Hospital Factory for Manufacturing Customized, Patient Specific 3D Anatomo-Functional Model and Prostheses", funded by **CNR** (**National Research Council**), unit leader

2009-2013 "Aortic VAlve Sparing: toward an innovative PROsthesis design (through the exploitation of advanced materials and computational mechanics)", funded by **Fondazione Cariplo**, project leader

2010-2012 "Shape-memory-alloy advanced modeling for civil, industrial and biomedical engineering applications", funded by **MIUR (Italian Department of University Research)**, project leader

2007-2009 "SMARTeR Shape Memory Alloys to Regulate Transient Responses in civil engineering", funded by **ESF (European Science Foundation)** within S3T program, unit leader

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", funded by **MIUR**, project leader

2005-2007 "Superelastic behaviour of shape-memory alloys: development of three-dimensional numerical models and device simulations", funded by **CNR**, unit leader

2004-2006 "Shape-memory alloys: constitutive modeling, structural behavior, experimental validation and applicability to innovative biomedical applications" funded by **MIUR**, project leader

2002-2003 "Shape-memory alloys: constitutive modeling, structural behavior, experimental validation and applicability to innovative biomedical applications" funded by **MIUR**, project leader

2001 "Self-diagnosing materials: constitutive modelling and structural element analysis", funded by **CNR**, local unit leader

2001 "Tridimensional finite element biomechanical analysis of stent implants and of the mechanical endoprosthesis-vessel interaction", funded by **CNR**, unit leader

CONSULTANCY WORK:

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 "Mechanical testing on femurs", for Lima Corporate (Italy)

2013 "Structural investigation of a new manufacturing machine Mod.FC3013 Montaboette-Montafianchi", Brustia Alfameccanica (Italy)

Since 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", Società 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 polyutheran composites", Fast-Form S.r.l.
2003 "Design indications for rectangular pressure vessels", Fedegari Autoclavi
2001 "Implementation of SMA constitutive models", MSC Marc (MSC Software Corporation)
1999 "Implementation of SMA constitutive models", LS-Dyna (Livermore Software Technology 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 and 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):

- 7th Summer School on **"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
- **Nonlinear Computational Solid & Structural Mechanics: theoretical formulations, technologies, and computations** (in collaboration with F. Brezzi, R.L. Taylor, M. Bischoff, A. Reali, G. Sangalli):
  - Pavia, May 16-20, 2016
  - Pavia, May 5-9, 2014
  - Pavia, April 16-20, 2012
  - Pavia, April 12-16, 2010
- **Advanced Finite Element Technologies, CISM** (in collaboration 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** (in collaboration 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** (in collaboration 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 & 2014 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:

- 3 Assistant Professors (Michele Conti, Simone Morganti)
- 3 Associate Professors (Alessandro Reali, Lorenza Petrini, Edoardo Artioli)

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, that let you 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 rpint 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.

- **Activ-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 Temporal Bone Holder*, 2015

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 Office n. 102016000077424, 2016

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 Office n. WO2004IT00024 20040130, 2014
- F.Auricchio, R.Stanco, S.Pigazzani (Inventors), Smarrita Camilla Design; Smarrita Camilla Project, F.Auricchio, R.Stanco, S.Pigazzani (Applicants) *Networked structure and process and means for lifting and lowering the same*, European Patent Office n. WO2000IT00252 20000619, 2000

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

2017 **Moderator** in the round table entitled "*Oltre l'immaginazione: la concretezza del Biomodello. Utilizzi, limitazioni e campi di applicazione della Stampa 3d in un confronto multi-clinico: neurochirurgia, ortopedia, otorino laringoiatria, chirurgia laparoscopica*", HEALTH IT, Milano (Italy)

2017 **Conference**, "3D-Printed Substrate Integrated Slab Waveguide for Single-Mode Bandwidth Enhancement"

2017 **Plenary Lecture**, "An advanced example of computer aided clinical trial: the iCardioCloud Project", Mathematical Modeling for the Circulatory System Models, Equations, Applications, Verona (Italy)

2017 **Plenary Lecture**, "A computational approach for the fatigue analysis of NiTi stents", SMART 2017, Madrid (Spain)

2017 **Plenary Lecture**, "Stampa 3D in Chirurgia Generale e Chirurgia Vascolare", Stampa 3D in Medicina: regole, tutele, mercato e formazione, Bologna (Italy)

2017 **Plenary Lecture**, "Challenges of Stability Analysis using mixed FEM", GAMM 2017, Weimar (Germany)

2017 **Plenary Lecture,** Coupled Problems 2017, Rhodes (Greece)

2017 **Invited Lecture, "**3D PRINTING: a bridge to the future … with many open (computational) issues", **Symposium on Integrated Data Assimilation**, within the SimTech Cluster of Excellence, Stuttgart (Germany)

2016 **Invited lecture**, "Stampanti in 3D. Una tecnologia abilitante con applicazioni dal manifatturiero avanzato alla chirurgia", Ordine degli Ingegneri di Pavia assembly, Pavia (Italy)

2016 **Invited Lecture,** Multiscale Innovative Materials and Structures - MIMS16, Cetara (Italy)

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** (IL) – 45 min., 17th EFORT Congress, Geneva

(Switzerland), "3D Printing: Clinical Applications In Orthopaedics And Traumatology"

2016 **Plenary Lecture,** MAFELAP 2016, 15th 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° 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 "Ricerca traslazionale", Milano (Italy).

2015 **Invited Lecture,** PRIN meeting "Cardiovascular Modeling", "Prediction of EVAR outcome by means of computational models and validation"

2015 **Invited Seminar**, "Mechanics of Solids: From beam theory to rapid prototyping for surgery planning", Università di Napoli Federico II, Napoli (Italy)

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**, 86th 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"

2014 **Invited Seminar**, Laboratoire de Mécanique des Solides, Ecole Polytechnique, Paris (France), "Shape-Memory Alloys: 3D Constitutive Modeling and Biomedical Device Investigation"

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"

ORGANISATION OF INTERNATIONAL & NATIONAL CONFERENCES:

2017 IDBN

2017 SIM-AM 2017, ECCOMAS Conference on *Simulation for Additive Manufacturing* (co-chair) – Munich (Germany)

2017 IGA 2017, ECCOMAS Conference on *Isogeometric Analysis* (co-chair) – Munich (Germany)

2017 EUROMECH 2017, Colloquium on *Modeling and Simulation of Additive Manufacturing Processes* (co-chair) – Aveiro (Portugal)

2015 PLAST 2015, Conference on: *Stampa 3D nel medicale: tecnologie, applicazioni ed aspetti regolatori*, Milano (Italy)

2015 3DPRINTHUB, 1st "3D Printing Italian Meeting in Medical and in Orthopedics and Traumatology" – Milano (Italy)

2011 ECCOMAS 2011, 5th ECCOMAS Thematic Conference on *Smart Structures and Materials SMART'11* – Saarbrücken (Germany)

2009 MULTIMAT09, Numerical Methods for Multi-Material Fluids and Structures – Pavia (Italy)

2008 WCCM8 – ECCOMAS 2008, 8th World Congress on Computational Mechanics and 5th European Congress on Computational Methods in Applied Sciences and Engineering – Venice (Italy)

2008 SMST 2008, 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 2000, 5th European symposium on martensitic transformations and shape memory alloys – Como (Italy)

ORGANIZATION OF SESSION OR MINI-SYMPOSIUM IN INTERNATIONAL & NATIONAL CONFERENCES:

2017 ICBT17, International Conference on Biomedical Technology, Hannover (Germany), Mini-symposium on: *"Simulations for cardiovascular diagnosis and treatment: from computer through devices to bedside*"

2017 COMPLAS 2017, 14th International Conference on Computational Plasticity, Mini-symposium on: "Computational Biomechanics" – Barcelona (Spain)

2017 IGA 2017, ECCOMAS Conference on *Isogeometric Analysis* (co-chair) – Munich (Germany)

2017 SIAM 2017, Conference on Computational Science and Engineering – Atlanta (GE, USA) ??????

2016 ECCOMAS Congress 2016, Minisymposium on: "Simulation of Cardiovascular Procedures and Devices" European Congress on Computational Methods in Applied Sciences and Engineering – Crete (Greece)

2012 ICTAM 2012, co-chair (with prof. Eliot Fried from McGill University, Canada) the Pre-Nominated Session (PNS) entitled *Mechanics of phase transformations* at the 23rd International Congress of Theoretical and Applied Mechanics – Beijing (China)

2011 COMPDYN 2011, Minisymposium on "Meshless Methods", 3rd International Conference on Computational Methods in Structural Dynamics & Earthquake Engineering – Corfù (Greece)

SCIENTIFIC BOARD OF INTERNATIONAL CONFERENCES (SINCE 2010):

2018 ECCM 6 & ECFD 7, 6th European Conference on Computational Mechanics (Solids, Structures and Coupled Problems) and 7th 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 2017, French National Workshop on Structural Computation – Giens Peninsula (France)
2017 ICBT17, International Conference on Biomedical Technology, Hannover (Germany)
2017 CMBE17, 5th International Conference on Computational and Mathematical Biomedical Engineering, University of Pittsburgh, Pennsylvania (USA)
2017 SMART 2017, 8th ECCOMAS Thematic Conference on Smart Structures and Materials, Scientific Committee Member – Madrid (Spain)
2016 10th International Conference on Mechanics of Time Dependent Materials – Paris (France)
2016 CIMTEC 2016, 5th 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, 2015 Pan-American Congress on Computational Mechanics – Buenos Aires (Argentina)
2015 ICCB 2015, VI International Conference on Computational Bioengineering – Barcelona (Spain)
2015 CSMA 2015, French National Conference in Computational Structural Mechanics – Giens Peninsula (France)
2014 MAC 2014, 4th Munich Aortic and Carotid Conference – Munich (Germany)
2013 SEECCM III, III South-East European Conference on Computational Mechanics – Kos (Greece)
2013 SMST2013, European SMST (Shape Memory and Superelastic Technologies) Conference – Prague (Czech Republic)
2012 WCCM 2012, 10th World Congress on Computational Mechanics – Sao Paulo (Brazil)
2012 CIMTEC 2012, 4th 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 YIC2012, First European Community on Computational Methods in Applied Sciences (ECCOMAS) Young Investigators Conference – Aveiro (Portugal)
2011 TCCM 2011, Trends & Challenges in Computational Mechanics – Padova (Italy)
2011 SMART11, 5th ECCOMAS Thematic Conference on Smart Structures and Materials – Saarbrucken (Germany)
2011 ASEM11+, The 2011 World Congress on Advances in Structural Engineering and Mechanics – Seoul (Korea)
2011 COMPDYN 2011, Computational Methods in Structural Dynamics and Earthquake Engineering – Corfu (Greece)
2010 GIMC 2010, XVIII Convegno Italiano di Meccanica Computazionale – Siracusa (Italy)
2010 S3T 2010, Smart Structural Systems Technologies – Porto (Portugal)
2010 Tenth International Conference on Computational Structures Technology – Valencia (Spain)

OTHER ACCOMPLISHMENTS:

- Selected as an editor's choice in European Journal of Cardio-Thoracic Surgery (EJCTS) for the paper "An Experimental Investigation of the Impact of Thoracic Endovascular Aortic Repair on Longitudinal Strain", March 2017
- 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, Dalhouise University, Canada, 2010
- Adjunct Professor, Faculty of Graduate Studies at Dalhouise, Dalhouise 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 6th 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. F.J.H. Nauta, H.W.L. de Beaufort, M. Conti, S. Marconi, A.V. Kamman, A. Ferrara, J.A. van Herwaarden, F.L. Moll, F. Auricchio, S. Trimarchi. "Impact of thoracic endovascular aortic repair on radial strain in an ex vivo porcine model". European Journal of Cardio-Thoracic Surgery (2017)
2. G. Balduzzi, M. Aminbaghai, F. Auricchio, J. Füssl. "Planar Timoshenko-like model for multilayer non-prismatic beams", International Journal of Mechanics and Materials in Design, pp. 1-20 (2017)
3. R. Dorati, A. De Trizio, S. Marconi, A. Ferrara, F. Auricchio, I. Genta, T. Modena, M. Benazzo, A. Benazzo, G. Volpato, B.Conti. "Design of a Bioabsorbable Multilayered Patch for Esophagus Tissue Engineering", Macromolecular Bioscience (2017), doi: 10.1002/mabi.201600426
4. E. Massoni, L. Silvestri, G. Alaimo, S. Marconi, M. Bozzi, L. Perregrini, F. Auricchio. "3D-Printed Substrate Integrated Slab Waveguide for Single-Mode Bandwidth Enhancement", IEEE Microwave and Wireless Components Letters (2017)
5. G. Alaimo, S. Marconi, L. Costato, F. Auricchio. "Influence of meso-structure and chemical composition on FDM 3D-printed parts", Composites Part B: Engineering, 113: 371-380 (2017)
6. S. Marconi, L. Pugliese, M. Botti, A. Peri, E. Cavazzi, F. Auricchio, A. Pietrabissa. "Value of 3D-printing for the comprehension of surgical anatomy", Article in Press on Surgical Endoscopy (2017), doi: 10.1007/s00464-017-5457-5
7. G. Scalet, F. Auricchio, M. Conti. "Computational analysis of advanced shape-memory alloy devices through a robust modeling framework", Shape Memory and Superelasticity (2017), doi: 10.1007/s40830-017-0102-7
8. G. Scalet, F. Auricchio. "Computational methods for elastoplasticity: an overview of conventional and less-conventional approaches", Archives of Computational Methods in Engineering, 1-44 (2017)
9. A. Ferrara, S. Morganti, P. Totaro, A. Mazzola, F. Auricchio. "Human dilated ascending aorta: Mechanical characterization via uniaxial tensile tests", Journal of The Mechanical Behavior of Biomedical Materials, 53: 257-271 (2016)
10. A. Pietrabissa, S. Marconi, A. Peri, L. Pugliese, E. Cavazzi, A. Vinci, M. Botti, F. Auricchio. "From CT scanning to 3-D printing technology for the preoperative planning in laparoscopic splenectomy", Surgical Endoscopy and Other Interventional Techniques, 30 (1): 366-371 (2016)
11. A. Amendola, C.J. Smith, R. Goodall, F. Auricchio, L. Feo, G. Benzoni, F. Fraternali. "Experimental response of additively manufactured metallic pentamode materials confined between stiffening plates", Composite Structures, 142: 254-262 (2016)
12. V. Sepe , F. Auricchio, S. Marfia, E. Sacco. "Homogenization techniques for the analysis of porous SMA", Computational Mechanics, 57 (5): 755-772 (2016)
13. F. Auricchio, L.B. da Veiga, J. Kiendl, C. Lovadina, A. Reali. "Isogeometric collocation mixed methods for rods", Discrete and Continuous Dynamical Systems-Series S , 9 (1): 33-42 (2016)
14. F. Auricchio, A. Constantinescu, M. Conti, G. Scalet. "Fatigue of Metallic Stents: From Clinical Evidence to Computational Analysis", Annals of Biomedical Engineering, 44 (2): 287-301 (2016)
15. F. Auricchio, E. Boatti, A. Reali, U. Stefanelli. "Gradient structures for the thermomechanics of shape-memory materials", Computer Methods In Applied Mechanics and Engineering, 299: 440-469 (2016)
16. G. Scalet, F. Auricchio, D.J. Hartl. "Efficiency and effectiveness of implicit and explicit approaches for the analysis of shape-memory alloy bodies", Journal of Intelligent Material

Systems And Structures, 27 (3): 384-402 (2016)
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26. F. Auricchio, A. Lefieux, A. Reali, A. Veneziani. “A locally anisotropic fluid-structure interaction remeshing strategy for thin structures with application to a hinged rigid leaflet”, International Journal for Numerical Methods in Engineering, 107 (2): 155-180 (2016)
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29. S. Marconi, L. Pugliese, M. Del Chiaro, R. Pozzi Mucelli, F. Auricchio, A. Pietrabissa. “An innovative strategy for the identification and 3D reconstruction of pancreatic cancer from CT images”, Updates in Surgery, 68(3): 273-278 (2016)
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overview", European Heart Journal Supplements, 18 (E): E49-E56. (2016)
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39. F. Auricchio, A. Constantinescu, M. Conti, G. Scalet. "A computational approach for the lifetime prediction of cardiovascular balloon-expandable stents", International Journal of Fatigue, 75: 69-79 (2015)
40. G. Scalet, F. Auricchio, E. Bonetti, L. Castellani, D. Ferri, M. Pachera, F. Scavello. "An experimental, theoretical and numerical investigation of shape memory polymers", International Journal of Plasticity, 67: 127-147 (2015)
41. M. J. Ashrafi, J. Arghavani, R. Naghdabadi, F. Auricchio. "A three-dimensional phenomenological constitutive model for porous shape memory alloys including plasticity effects", Journal of Intelligent Material Systems and Structures, 27 (5): 608-624 (2015)
42. F. Auricchio, G. Balduzzi, C. Lovadina. "The dimensional reduction approach for 2D non-prismatic beam modelling: A solution based on Hellinger-Reissner principle", International Journal of Solids And Structures, 63: 264-276 (2015)
43. M. F. Urbano, F. Auricchio. Modeling Permanent Deformations of Superelastic and Shape Memory Materials. Journal of Functional Biomaterials, 6: 398-406 (2015)
44. E. Gasparini, S.C. Tarantino, M. Conti, R. Biesuz, P. Ghigna, F. Auricchio, M.P. Riccardi, M. Zema. "Geopolymers from low-T activated kaolin: Implications for the use of alunite-bearing raw materials", Applied Clay Science, 114: 530-539 (2015)
45. A. Beltempo, G. Balduzzi, G. Alfano, F. Auricchio. "Analytical derivation of a general 2D non-prismatic beam model based on the Hellinger-Reissner principle", Engineering Structures, 101: 88-98 (2015)
46. V. Sepe, F. Auricchio, S. Marfia, E. Sacco. "Micromechanical analysis of porous SMA", Smart Materials and Structures, 24 (8): 085035 (2015)
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56. F.J. Nauta, M. Conti, S. Marconi, A.V. Kamman, G. Alaimo, S. Morganti, A. Ferrara, J. van Herwaarden, F.L. Moll, F. Auricchio, S. Trimarchi. “Thoracic Endovascular Repair Decreases Longitudinal Aortic Distensibility: Experimental Study in an Ex-Vivo Porcine Model”, Journal of the American College of Cardiology, 66 (15): B317-B317 (2015)
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Extension/Inflation Data", Archives of Computational Methods in Engineering, 21 (3): 273-292 (2014)
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