



Professor Alessandro Reali

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Computational Mechanics & Advanced Materials Group
Dean of the Department of Civil Engineering and Architecture
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Biography:

Prof. Alessandro Reali was born in Pavia on February 28th, 1977. After a Laurea degree (equivalent to MSc) summa cum laude in Civil Engineering at the University of Pavia (2001), he got a MSc (2004) and a PhD (2005) in Earthquake Engineering from the University of Pavia and the Institute of Advanced Study of Pavia. After three years as a Postdoctoral Fellow, he became Assistant Professor (2008), then Tenured Associate Professor (2013) and is currently Full Professor (since 2016) of Mechanics of Solids and Structures at the University of Pavia.

Prof. Reali authored more than 90 papers on international journals, including some seminal articles which have recently led to his identification as one of the "ISI Highly Cited Researchers" (in 2014, 2015, 2016, 2017). He was invited to give seminars at many internationally renowned academic institutions, as well as to give plenary and keynote lectures at relevant international conferences. He received important research awards in the field of Computational Mechanics such as the IACM Fellows Award (2016), the IACM "John Argyris" Award (2014), and the ECCOMAS "O.C. Zienkiewicz" Award (2012), as well as an "ERC Starting Grant" (2010).

He also participated to many research projects (being the coordinator for some of them) funded, among others, by the European Research Council (ERC), the European Science Foundation (ESF), the Italian Government (MIUR), and the US Office of Naval Research (ONR), as well as by companies such as, e.g., Total, Hutchinson, Nokia Corporation, and Saes Getters.

Research areas:

Computational Mechanics: isogeometric methods, mixed finite element methods, advanced material modeling, innovative structural elements, strong-form methods, immersed methods, advanced simulation methods for fluids and fluid-structure interaction problems.

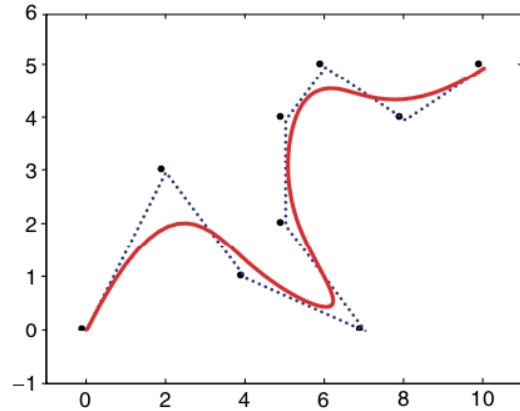


Fig. 2. Piece-wise cubic B-Spline curve (solid line) and its control polygon (dotted).

From: A. Reali. An Isogeometric Analysis Approach for the Study of Structural Vibrations. *Journal of Earthquake Engineering*, vol. 10, s.i. 1 (2006), pp. 1–30.

Selected Publications:

- F. Auricchio, L. Beirão da Veiga, C. Lovadina, A. Reali. A Stability Study of some Mixed Finite Elements for Large Deformation Elasticity Problems. *Computer Methods in Applied Mechanics and Engineering*, vol. 194 (2005), pp. 1075–1092.
- F. Auricchio, L. Beirão da Veiga, C. Lovadina, A. Reali. An Analysis of some Mixed-Enhanced Finite Elements for Plane Linear Elasticity. *Computer Methods in Applied Mechanics and Engineering*, vol. 194 (2005), pp. 2947–2968.
- A. Reali. An Isogeometric Analysis Approach for the Study of Structural Vibrations. *Journal of Earthquake Engineering*, vol. 10, s.i. 1 (2006), pp. 1–30.
- J.A. Cottrell, A. Reali, Y. Bazilevs, T.J.R. Hughes. Isogeometric Analysis of Structural Vibrations. *Computer Methods in Applied Mechanics and Engineering*, vol. 195 (2006), pp. 5257–5296.
- F. Auricchio, A. Reali. A Phenomenological One-dimensional Model Describing Stress-induced Solid Phase Transformation with Permanent Inelasticity. *Mechanics of Advanced Materials and Structures*, vol. 14 (2007), pp. 43–55.
- F. Auricchio, A. Reali, U. Stefanelli. A Three-dimensional Model Describing Stress-induced Solid Phase Transformation with Permanent Inelasticity. *International Journal of Plasticity*, vol. 23 (2007), pp. 207–226.
- J.A. Cottrell, T.J.R. Hughes, A. Reali. Studies of Refinement and Continuity in Isogeometric Structural Analysis. *Computer Methods in Applied Mechanics and Engineering*, vol. 196 (2007), pp. 4160–4183.
- F. Auricchio, L. Beirão da Veiga, A. Buffa, C. Lovadina, A. Reali, G. Sangalli. A Fully Locking-free Isogeometric Approach for Plane Linear Elasticity Problems: a Stream Function Formulation. *Computer Methods in Applied Mechanics and Engineering*, vol. 197 (2007), pp. 160–172.
- Y. Bazilevs, V.M. Calo, J.A. Cottrell, T.J.R. Hughes, A. Reali, G. Scovazzi. Variational Multiscale Residual-based Turbulence Modeling for Large Eddy Simulation of Incompressible Flows. *Computer Methods in Applied Mechanics and Engineering*, vol. 197 (2007), pp. 173–201.
- F. Auricchio, A. Reali. Shape Memory Alloys: material modeling and device finite element simulations. *Materials Science Forum*, vol. 583 (2008), pp. 257–275.
- F. Auricchio, P. Carotenuto, A. Reali. On the geometrically exact beam model: a consistent, effective and simple derivation from three-dimensional finite elasticity. *International Journal of Solids and Structures*, vol. 45 (2008), pp. 4766–4781.
- T.J.R. Hughes, A. Reali, G. Sangalli. Duality and Unified Analysis of Discrete Approximations in Structural Dynamics and Wave Propagation: Comparison of p-method Finite Elements with k-method NURBS. *Computer Methods in Applied Mechanics and Engineering*, vol. 197 (2008), pp. 4104–4124.
- F. Auricchio, A. Reali, U. Stefanelli. A macroscopic 1D model for shape memory alloys including asymmetric behaviors and transformation-dependent elastic properties. *Computer Methods in Applied Mechanics and Engineering*, vol. 198 (2009), pp. 1631–1637.
- F. Auricchio, A. Coda, A. Reali, M. Urbano. SMA numerical modeling versus experimental results: parameter identification and model prediction capabilities. *Journal of Materials Engineering and Performance*, vol. 18 (2009), pp. 649–654.
- T.J.R. Hughes, A. Reali, G. Sangalli. Efficient Quadrature for NURBS-based Isogeometric Analysis. *Computer Methods in Applied Mechanics and Engineering*, vol. 199 (2010), pp. 301–313.
- F. Auricchio, L. Beirão da Veiga, C. Lovadina, A. Reali. The importance of the exact satisfaction of the incompressibility constraint in nonlinear elasticity: mixed FEMs versus NURBS-based approximations. *Computer Methods in Applied Mechanics and Engineering*, vol. 199 (2010), pp. 314–323.
- J. Arghavani, F. Auricchio, R. Naghdabadi, A. Reali, S. Sohrabpour. A 3-D phenomenological model for shape memory alloys under multiaxial loadings. *International Journal of Plasticity*, vol. 26 (2010), pp. 976–991.
- F. Auricchio, A. Reali, A. Tardugno. Shape-memory alloys: effective 3D modelling, computational aspects and design of devices. *International Journal of Computational Materials Science and Surface Engineering*, vol. 3 (2010), pp. 199–223.
- F. Auricchio, L. Beirão da Veiga, T.J.R. Hughes, A. Reali, G. Sangalli. Isogeometric Collocation Methods. *Mathematical Models and Methods in Applied Sciences*, vol. 20 (2010), pp. 2075–2107.
- F. Auricchio, M. Conti, S. Morganti, A. Reali. Shape Memory Alloys: from constitutive modeling to finite

element analysis of stent deployment. *CMES – Computer Modeling in Engineering & Sciences*, vol. 57 (2010), pp. 225–243.

J. Arghavani, F. Auricchio, R. Naghdabadi, A. Reali, S. Sohrabpour. A 3D finite strain phenomenological constitutive model for shape memory alloys considering martensite reorientation. *Continuum Mechanics and Thermodynamics*, vol. 22 (2010), pp. 345–362.

D. Asprone, F. Auricchio, G. Manfredi, A. Prota, A. Reali, G. Sangalli. SPH methods for a 1D elastic model problem: error analysis and development of a second-order accurate formulation. *CMES – Computer Modeling in Engineering & Sciences*, vol. 62 (2010), pp. 1–22.

J. Arghavani, F. Auricchio, R. Naghdabadi, A. Reali. On the robustness and efficiency of integration algorithms for a 3D finite strain phenomenological SMA constitutive model. *International Journal for Numerical Methods in Engineering*, vol. 85 (2011), pp. 107–134.

D. Asprone, F. Auricchio, A. Reali. Novel Finite Particle Formulations Based on Projection Methodologies. *International Journal for Numerical Methods in Fluids*, vol. 65 (2011), pp. 1376–1388.

F. Auricchio, A.-L. Bessoud, A. Reali, U. Stefanelli. A three-dimensional phenomenological model for Magnetic Shape Memory Alloys. *GAMM-Mitteilungen*, vol. 34 (2011), pp. 90–96.

J. Arghavani, F. Auricchio, R. Naghdabadi, A. Reali. An improved, fully symmetric, finite strain phenomenological constitutive model for shape memory alloys. *Finite Elements in Analysis and Design*, vol. 47 (2011), pp. 166–174.

F. Auricchio, S. Morganti, A. Reali, M. Urbano. Theoretical and experimental study of the shape memory effect of beams in bending conditions. *Journal of Materials Engineering and Performance*, vol. 20 (2011), pp. 712–718.

C. de Falco, A. Reali, R. Vázquez. GeoPDEs: a research tool for IsoGeometric Analysis of PDEs. *Advances in Engineering Software*, vol. 42 (2011), pp. 1020–1034.

L. Beirão da Veiga, C. Lovadina, A. Reali. Avoiding shear locking for the Timoshenko beam problem via isogeometric collocation methods. *Computer Methods in Applied Mechanics and Engineering*, vol. 241–244 (2012), pp. 38–51.

F. Auricchio, M. Conti, M. Ferraro, A. Reali. Evaluation of carotid stent scaffolding through patient-specific finite element analysis. *International Journal for Numerical Methods in Biomedical Engineering*, vol. 28 (2012), pp. 1043–1055.

F. Auricchio, L. Beirão da Veiga, T.J.R. Hughes, A. Reali, G. Sangalli. Isogeometric collocation for elastostatics and explicit dynamics. *Computer Methods in Applied Mechanics and Engineering*, vol. 249–252 (2012), pp. 2–14.

F. Auricchio, F. Calabrò, T.J.R. Hughes, A. Reali, G. Sangalli. A Simple Algorithm for Obtaining Nearly Optimal Quadrature Rules for NURBS-based Isogeometric Analysis. *Computer Methods in Applied Mechanics and Engineering*, vol. 249–252 (2012), pp. 15–27.

F. Auricchio, M. Conti, S. Marconi, A. Reali, J. Tolenaar, S. Trimarchi. Patient-specific aortic endografting simulation: from diagnosis to prediction. *Computers in Biology and Medicine*, vol. 43 (2013), pp. 386–394.

F. Auricchio, M. Conti, A. Ferrara, S. Morganti, A. Reali. Patient-specific finite element analysis of carotid artery stenting: a focus on vessel modeling. *International Journal for Numerical Methods in Biomedical Engineering*, vol. 29 (2013), pp. 645–664.

F. Auricchio, L. Beirão da Veiga, J. Kiendl, C. Lovadina, A. Reali. Locking-free isogeometric collocation methods for spatial Timoshenko rods. *Computer Methods in Applied Mechanics and Engineering*, vol. 263 (2013), pp. 113–126.

D. Asprone, F. Auricchio, C. Menna, S. Morganti, A. Prota, A. Reali. Structural finite element analysis of the buckling behavior of honeycomb structures. *Composite Structures*, vol. 105 (2013), pp. 240–255.

D. Schillinger, J.A. Evans, A. Reali, M.A. Scott, T.J.R. Hughes. Isogeometric Collocation: Cost Comparison with Galerkin Methods and Extension to Adaptive Hierarchical NURBS Discretizations. *Computer Methods in Applied Mechanics and Engineering*, vol. 267 (2013), pp. 170–232.

F. Auricchio, L. Beirão da Veiga, C. Lovadina, A. Reali, R.L. Taylor, P. Wriggers. Approximation of incompressible large deformation elastic problems: some unresolved issues. *Computational Mechanics*, vol. 52 (2013), pp. 1153–1167.

D. Asprone, F. Auricchio, A. Reali. Modified Finite Particle Method: applications to elasticity and plasticity problems. *International Journal of Computational Methods*, vol. 11 (2014), pp. 1350050:1–23.

- F. Auricchio, M. Conti, A. Ferrara, S. Morganti, A. Reali. Patient-specific simulation of a stentless aortic valve implant: the impact of fibers on leaflet performance. *Computer Methods in Biomechanics and Biomedical Engineering*, vol. 17 (2014), pp. 277–285.
- H. Gomez, A. Reali, G. Sangalli. Accurate, efficient, and (iso)geometrically flexible collocation methods for phasefield models. *Journal of Computational Physics*, vol. 262 (2014), pp. 153–171.
- T.J.R. Hughes, J.A. Evans, A. Reali. Finite Element and NURBS Approximations of Eigenvalue, Boundary-value, and Initial-value Problems. *Computer Methods in Applied Mechanics and Engineering*, vol. 272 (2014), pp. 290–320.
- F. Auricchio, M. Conti, S. Morganti, A. Reali. Simulation of transcatheter aortic valve implantation: a patient-specific finite element approach. *Computer Methods in Biomechanics and Biomedical Engineering*, vol. 17 (2014), pp. 1347–1357.
- J.F. Caseiro, R.A.F. Valente, A. Reali, J. Kiendl, F. Auricchio, R.J. Alves de Sousa. On the Assumed Natural Strain method to alleviate locking in solid-shell NURBS-based finite elements. *Computational Mechanics*, vol. 53 (2014), pp. 1341–1353.
- D. Asprone, F. Auricchio, A. Montanino, A. Reali. A Modified Finite Particle Method: multi-dimensional elastostatics and dynamics. *International Journal for Numerical Methods in Engineering*, vol. 99 (2014), pp. 1–25.
- S. Morganti, M. Conti, M. Aiello, A. Valentini, A. Mazzola, A. Reali, F. Auricchio. Simulation of transcatheter aortic valve implantation through patient-specific finite element analysis: two clinical cases. *Journal of Biomechanics*, vol. 47 (2014), pp. 2547–2555.
- F. Auricchio, M. Conti, A. Lefieux, S. Morganti, A. Reali, F. Sardanelli, F. Secchi, S. Trimarchi, A. Veneziani. Patient-specific analysis of post-operative aortic hemodynamics: a focus on Thoracic Endovascular Repair (TEVAR). *Computational Mechanics*, vol. 54 (2014), pp. 943–953.
- G.H.V. van Bogerijen, F. Auricchio, M. Conti, A. Lefieux, A. Reali, A. Veneziani, J.L. Tolenaar, F.L. Moll, V. Rampoldi, S. Trimarchi. Aortic hemodynamics after thoracic endovascular aortic repair, with particular attention to the bird-beak configuration. *Journal of Endovascular Therapy*, vol. 21 (2014), pp. 791–802.
- F. Auricchio, D. Boffi, L. Gastaldi, A. Lefieux, A. Reali. A study on unfitted 1D finite element methods. *Computers and Mathematics with Applications*, vol. 68 (2014), pp. 2080–2102.
- L. De Lorenzis, J.A. Evans, T.J.R. Hughes, A. Reali. Isogeometric Collocation: Neumann boundary conditions and contact. *Computer Methods in Applied Mechanics and Engineering*, vol. 284 (2015), pp. 21–54.
- J. Kiendl, F. Auricchio, L. Beir \square ao da Veiga, C. Lovadina, A. Reali. Isogeometric collocation methods for the Reissner-Mindlin plate problem. *Computer Methods in Applied Mechanics and Engineering*, vol. 284 (2015), pp. 489–507.
- S. Morganti, F. Auricchio, D.J. Benson, F.I. Gambarin, S. Hartmann, T.J.R. Hughes, A. Reali. Patient-specific isogeometric structural analysis of aortic valve closure. *Computer Methods in Applied Mechanics and Engineering*, vol. 284 (2015), pp. 508–520.
- A. Reali, H. Gomez. An isogeometric collocation approach for Bernoulli-Euler beams and Kirchhoff plates. *Computer Methods in Applied Mechanics and Engineering*, vol. 284 (2015), pp. 623–636.
- J.F. Caseiro, R.A.F. Valente, A. Reali, J. Kiendl, F. Auricchio, R.J. Alves de Sousa. Assumed Natural Strain NURBS-based solid-shell element for the analysis of large deformation elasto-plastic thin-shell structures. *Computer Methods in Applied Mechanics and Engineering*, vol. 284 (2015), pp. 861–880.
- J. Kiendl, F. Auricchio, T.J.R. Hughes, A. Reali. Single-variable formulations and isogeometric discretizations for shear deformable beams. *Computer Methods in Applied Mechanics and Engineering*, vol. 284 (2015), pp. 988–1004.
- S. Kollmannsberger, A. Ozcan, J. Baiges, M. Ruess, E. Rank, A. Reali. Parameter-free, weak imposition of Dirichlet boundary conditions and coupling of trimmed and non-conforming patches. *International Journal for Numerical Methods in Engineering*, vol. 101 (2015), pp. 670–699.
- F. Auricchio, A.-L. Bessoud, A. Reali, U. Stefanelli. A phenomenological model for the magneto-mechanical response of single-crystal Magnetic Shape Memory Alloys. *European Journal of Mechanics – A/Solids*, vol. 52 (2015), pp. 1–11.
- L. Beir \square ao da Veiga, T.J.R. Hughes, J. Kiendl, C. Lovadina, J. Niiranen, A. Reali, H. Speleers. A locking-free model for Reissner-Mindlin plates: Analysis and isogeometric implementation via NURBS and triangular NURPS. *Mathematical Models and Methods in Applied Sciences*, vol. 25 (2015), pp. 1519–1551.

- J. Kiendl, M.-C. Hsu, M.C.H. Wu, A. Reali. Isogeometric Kirchhoff-Love shell formulations for general hyperelastic materials. *Computer Methods in Applied Mechanics and Engineering*, vol. 291 (2015), pp. 280–303.
- F. Auricchio, D. Boffi, L. Gastaldi, A. Lefieux, A. Reali. On a fictitious domain method with distributed Lagrange multiplier for interface problems. *Applied Numerical Mathematics*, vol. 95 (2015), pp. 36–50.
- M.-C. Hsu, D. Kamensky, F. Xu, J. Kiendl, C. Wang, M.C.H. Wu, J. Mineroff, A. Reali, Y. Bazilevs, M.S. Sacks. Dynamic and fluid-structure interaction simulations of bioprosthetic heart valves using parametric design with T-splines and Fung-type material models. *Computational Mechanics*, vol. 55 (2015), pp. 1211–1225.
- M. Ferraro, F. Auricchio, E. Boatti, G. Scalet, M. Conti, S. Morganti, A. Reali. An efficient finite element framework to assess flexibility performances of SMA self-expandable carotid artery stents. *Journal of Functional Biomaterials*, vol. 6 (2015), pp. 585–597.
- F. Auricchio, F. Brezzi, A. Lefieux, A. Reali. An “immersed” finite element method based on a locally anisotropic remeshing for the incompressible Stokes problem. *Computer Methods in Applied Mechanics and Engineering*, vol. 294 (2015), pp. 428–448.
- C. Manni, A. Reali, H. Speleers. Isogeometric collocation methods with generalized B-splines. *Computers and Mathematics with Applications*, vol. 70 (2015), pp. 1659–1675.
- F. Auricchio, M. Conti, M. Ferraro, S. Morganti, A. Reali, R.L. Taylor. Innovative and efficient stent flexibility simulations based on isogeometric analysis. *Computer Methods in Applied Mechanics and Engineering*, vol. 295 (2015), pp. 347–361.
- D. Asprone, F. Auricchio, A. Montanino, A. Reali. Review of the modified finite particle method and applications to incompressible solids. *International Journal of Multiphysics*, vol. 9 (2015), pp. 235–248.
- F. Auricchio, L. Beir \square ao da Veiga, J. Kiendl, C. Lovadina, A. Reali. Isogeometric collocation mixed methods for rods. *Discrete and Continuous Dynamical Systems – Series S*, vol. 9 (2016), pp. 33–42.
- F. Auricchio, E. Boatti, A. Reali, U. Stefanelli. Gradient structures for the thermodynamics of shape-memory materials. *Computer Methods in Applied Mechanics and Engineering*, vol. 299 (2016), pp. 440–469.
- H. Casquero, L. Liu, Y. Zhang, A. Reali, H. Gomez. Isogeometric collocation using analysis-suitable T-splines of arbitrary degree. *Computer Methods in Applied Mechanics and Engineering*, vol. 301 (2016), pp. 164–186.
- 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*, vol. 107 (2016), pp. 155–180.
- S. Morganti, N. Brambilla, A.S. Petronio, A. Reali, F. Bedogni, F. Auricchio. Prediction of patient-specific post-operative outcomes of TAVI procedure: The impact of the positioning strategy on valve performance. *Journal of Biomechanics*, vol. 49 (2016), pp. 2513–2519.
- D. Gallo, A. Lefieux, S. Morganti, A. Veneziani, A. Reali, F. Auricchio, M. Conti, U. Morbiducci. A Patient-Specific Follow Up Study of the Impact of Thoracic Endovascular Repair (TEVAR) on Aortic Anatomy and on Post-Operative Hemodynamics. *Computers & Fluids*, vol. 141 (2016), pp. 54–61.
- M. Conti, C. Long, M. Marconi, R. Berchiolli, Y. Bazilevs, A. Reali. Carotid artery hemodynamics before and after stenting: A patient specific CFD study. *Computers & Fluids*, vol. 141 (2016), pp. 62–74.
- J. Kiendl, M. Ambati, L. De Lorenzis, H. Gomez, A. Reali. Phase-field description of brittle fracture in plates and shells. *Computer Methods in Applied Mechanics and Engineering*, vol. 312 (2016), pp. 374–394.
- D. D’Angella, N. Zander, S. Kollmannsberger, F. Frischmann, E. Rank, A. Schr \square oder, A. Reali. Multi-level hp-adaptivity and explicit error estimation. *Advanced Modeling and Simulation in Engineering Sciences*, vol. 3 (2016), pp. 33:1–18.
- H. Casquero, L. Liu, Y. Zhang, A. Reali, J. Kiendl, H. Gomez. Arbitrary-degree T-splines for isogeometric analysis of fully nonlinear Kirchhoff-Love shells. *Computer-Aided Design*, vol. 82 (2017), pp. 140–153.
- S. Perotto, A. Reali, P. Rusconi, A. Veneziani. HIGAMod: A Hierarchical IsoGeometric Approach for MODEL reduction in curved pipes. *Computers & Fluids*, vol. 142 (2017), pp. 21–29.
- M. Conti, M. Marconi, G. Campanile, A. Reali, D. Adami, R. Berchiolli, F. Auricchio. Patient-specific finite element analysis of popliteal stenting. *Meccanica*, vol. 52 (2017), pp. 633–644.
- J. Niiranen, J. Kiendl, A. H. Niemi, A. Reali. Isogeometric analysis for sixth-order boundary value problems of gradient-elastic Kirchhoff plates. *Computer Methods in Applied Mechanics and Engineering*, vol. 316 (2017), pp. 328–348.
- T. Hoang, C.V. Verhoosel, F. Auricchio, E.H. van Brummelen, A. Reali. Mixed Isogeometric Finite Cell

Methods for the Stokes Problem. *Computer Methods in Applied Mechanics and Engineering*, vol. 316 (2017), pp. 400–423.

L. Heltai, J. Kiendl, A. DeSimone, A. Reali. A natural framework for isogeometric fluid-structure interaction based on BEM-shell coupling. *Computer Methods in Applied Mechanics and Engineering*, vol. 316 (2017), pp. 522–546.

G. Balduzzi, S. Morganti, F. Auricchio, A. Reali. Non-prismatic Timoshenko-like beam model: Numerical solution via isogeometric collocation. *Computers and Mathematics with Applications*, vol. 74 (2017), pp. 1531–1541.

O. Bas, D. D'Angella, J.G. Baldwin, N.J. Castro, F.M. Wunner, N.T. Saïdy, S. Kollmannsberger, A. Reali, E. Rank, E.M. De-Juan-Pardo, D.W. Hutmacher. Integrated Design, Material, and Fabrication Platform for Engineering Biomechanically and Biologically Functional Soft Tissues. *ACS Applied Materials & Interfaces*, vol. 9 (2017), pp. 29430–29437.

D. D'Angella, S. Kollmannsberger, E. Rank, A. Reali. Multi-level B-splines extraction for hierarchical local refinement of Isogeometric Analysis. *Computer Methods in Applied Mechanics and Engineering*, vol. 328 (2018), pp. 147–174.

J.-E. Dufour, P. Antolin, G. Sangalli, F. Auricchio, A. Reali. A cost-effective isogeometric approach for composite plates based on a stress recovery procedure. *Composites Part B: Engineering*, vol. 138 (2018), pp. 12–18.

A. Montanino, D. Asprone, F. Auricchio, A. Reali. Modified Finite Particle Methods for Stokes problems. *Computational Particle Mechanics*, vol. 5 (2018), pp. 141–160.

J. Kiendl, F. Auricchio, A. Reali. A displacement-free formulation for the Timoshenko beam problem and a corresponding isogeometric collocation approach. *Meccanica*, vol. 53 (2018), pp. 1403–1413.

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

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

T. Hoang, C.V. Verhoosel, F. Auricchio, E.H. van Brummelen, A. Reali. Skeleton-stabilized IsoGeometric Analysis: High-regularity Interior-Penalty methods for incompressible viscous flow problems. *Computer Methods in Applied Mechanics and Engineering*, vol. 337 (2018), pp. 324–351.

F. Auricchio, M. Ferretti, A. Lefieux, M. Musci, A. Reali, S. Trimarchi, A. Veneziani. Parallelizing a finite element solver in computational hemodynamics: a black box approach. *International Journal of High Performance Computing Applications*, vol. 32 (2018), pp. 351–362.

J.A. Evans, R.R. Hiemstra, T.J.R. Hughes, A. Reali. Explicit Higher-Order Accurate Isogeometric Collocation Methods for Structural Dynamics. *Computer Methods in Applied Mechanics and Engineering*, vol. 338 (2018), pp. 208–240.

S.F. Hosseini, A. Hashemian, A. Reali. On the Application of Curve Reparameterization in Isogeometric Vibration Analysis of Free-from Curved Beams. *Computers & Structures*, vol. 209 (2018), pp. 117–129.

N. Campomenosi, M.L. Mazzucchelli, B. Mihailova, M. Scambelluri, R.J. Angel, F. Nestola, A. Reali, M. Alvaro. How geometry and anisotropy affect residual strain in host-inclusion system: Coupling experimental and numerical approaches. *American Mineralogist*, vol. 103 (2018), pp. 2032–2035.

T. Hoang, C.V. Verhoosel, C.-Z. Qin, F. Auricchio, A. Reali, E.H. van Brummelen. Skeleton-stabilized ImmersoGeometric Analysis for incompressible viscous flow problems. *Computer Methods in Applied Mechanics and Engineering*, vol. 337 (2019), pp. 324–351.

A. Montanino, D. Asprone, A. Reali, F. Auricchio. A Least Square Residual version of the Modified Finite Particle Method to solve saddle point problems: application to stationary Stokes and Navier-Stokes Equations. *International Journal of Mechanical Sciences*, vol. 150 (2019), pp. 176–187.

G. Lorenzo, T.J.R. Hughes, P. Dominguez-Frojan, A. Reali, H. Gomez. Computer simulations suggest that prostate enlargement due to benign prostatic hyperplasia mechanically impedes prostate cancer growth. *Proceedings of the National Academy of Sciences of the United States of America*, vol. 116 (2019), pp. 1152–1161.

T. Horger, A. Reali, B. Wohlmuth, L. Wunderlich. A hybrid isogeometric approach on multi-patches with

- applications to Kirchhoff plates and eigenvalue problems. *Computer Methods in Applied Mechanics and Engineering*, vol. 348 (2019), pp. 396–408.
- M. Carraturo, C. Giannelli, A. Reali, R. Vázquez. Suitably graded THB-spline refinement and coarsening: Towards an adaptive isogeometric analysis of additive manufacturing processes. *Computer Methods in Applied Mechanics and Engineering*, vol. 348 (2019), pp. 660–679.
- R.M. Romarowski, E. Faggiano, M. Conti, A. Reali, S. Morganti, F. Auricchio. A novel computational framework to predict patient-specific hemodynamics after TEVAR: integration of structural and fluid-dynamics analysis by image elaboration. *Computers & Fluids*, vol. 179 (2019), pp. 806–819.
- S. Kollmannsberger, M. Carraturo, A. Reali, F. Auricchio. Accurate prediction of melt pool shapes in laser powder bed fusion by the non-linear temperature equation including phase changes - isotropic versus anisotropic conductivity *Integrating Materials and Manufacturing Innovation*, vol. 8 (2019), pp. 167–177.
- P. Fedeli, A. Frangi, F. Auricchio, A. Reali. Phase-field modeling for polarization evolution in ferroelectric materials via an isogeometric collocation method. *Computer Methods in Applied Mechanics and Engineering*, vol. 351 (2019), pp. 789–807.
- L. Leonetti, D. Magisano, A. Madeo, G. Garcea, J. Kiendl, A. Reali. A simplified Kirchhoff-Love large deformation model for elastic shells and its effective isogeometric formulation. *Computer Methods in Applied Mechanics and Engineering*, vol. 354 (2019), pp. 369–396.
- C. Garoni, H. Speleers, S.-E. Ekström, A. Reali, S. Serra-Capizzano, T.J. R. Hughes. Symbol-based analysis of finite element and isogeometric B-spline discretizations of eigenvalue problems: Exposition and review. Published online on *Archives of Computational Methods in Engineering*, doi:10.1007/s11831-018-9295-y
- A. Patton, J-E Dufour, P. Antolin, A. Reali. Fast and accurate elastic analysis of laminated composite plates via isogeometric collocation and an equilibrium-based stress recovery approach. Published online on *Composite Structures*, doi:10.1016/j.compstruct.2019.111026
- M. Carraturo, E. Rocca, E. Bonetti, D. Hömberg, A. Reali, F. Auricchio. Graded-material Design based on Phase-field and Topology Optimization. Published online on *Computational Mechanics*, doi:10.1007/s00466-019-01736-w
- G. Lorenzo, V.M. Pérez-García, A. Marin, L.A. Pérez-Romasanta, A. Reali, H. Gomez. Mechanistic modelling of PSA dynamics shows potential for personalised prediction of radiation therapy outcome. Accepted for publication on *Journal of the Royal Society Interface*.
- M. Coda, R.L. Taylor, M. Conti, M. Ferraro, S. Morganti, S. Trimarchi, F. Auricchio, A. Reali. A computational framework for the simulation of patient-specific thoracic aortic aneurysms: From DICOM images to structural isogeometric analysis.
- G. Balduzzi, S. Morganti, J. Fučík, M. Aminbaghai, A. Reali, F. Auricchio. Non-trivial effects of material anisotropy on the behavior of anisotropic beams: effective analyses by means of a simple Timoshenko-like model.
- S.F. Hosseini, A. Hashemian, A. Reali. Different Knot Placement Techniques in Geometry Construction for Isogeometric Framework: An Application to Spatial Curved Beams.