



Massimo CARRATURO

PERSONAL DATA

LUOGO E DATA DI NASCITA:	Bologna, Italia 20 Marzo 1990
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SCIENTIFIC PRODUCTION

Documents (Scopus):	30
International journal articles:	25 (List of publications).
Book chapters:	3
h-index (Scopus):	16
Citations (Scopus):	832 (from 636 documents)
National Scientific Habilitation (ASN):	Associate Professor in ICAR08/B2 - Solid and Structural Mechanics valid until 06/06/2034

WORK EXPERIENCE

MAY 2024 - PRESENT	Tenure-Track Assistant Professor (RTT) at the DEPARTMENT OF CIVIL ENGINEERING AND ARCHITECTURE, University of Pavia Research activity: Development of numerical methods for the simulation of metal powder bed fusion (PBF-LB/M) and directed energy deposition (DED) additive manufacturing processes; development and validation of multi-scale approaches for the mechanical and fatigue-life characterisation of ultra-light (lattice) AM components; uncertainty quantification for additive manufacturing applications; image-based simulations of AM components.
FEB 2022 - APR 2024	Fixed-term Assistant Professor (RTDa) at the DEPARTMENT OF CIVIL ENGINEERING AND ARCHITECTURE, University of Pavia Research activity: Development of numerical methods for the simulation of metal powder bed fusion additive manufacturing processes; development and validation of multi-scale approaches for the mechanical and fatigue-life characterisation of ultra-light (lattice) 3D-printed components produced with powder bed fusion technologies; uncertainty quantification via sparse grids for additive manufacturing applications; development of ontologies for additive manufacturing.
APR 2021 - JAN 2022	Research fellow (type a) on INTEGRATION OF CAD AND IMAGES IN STRUCTURAL ANALYSIS, at the DEPARTMENT OF CIVIL ENGINEERING AND ARCHITECTURE, University of Pavia Research activity: Modelling and development of finite element methods for the analysis of geometries obtained from Industrial Computed Tomography for metal components printed with powder bed fusion technologies; development and validation of spatiotemporal multi-scale methods for the simulation of 3D-printing processes; topology optimisation with a phase-field approach; immersed finite element methods (Finite Cell Method); isogeometric analysis (IGA).
APR 2020 - MAR 2021	Research fellow (type b) on NUMERICAL METHODS AND SIMULATION FOR ADDITIVE MANUFACTURING, at the DEPARTMENT OF CIVIL ENGINEERING AND ARCHITECTURE, University of Pavia Research activity: Design for additive manufacturing; topology optimisation; simulation of the 3D-printing process for powder bed fusion technologies; numerical and experimental characterisation of products printed with powder bed fusion technologies; immersed finite element methods (Finite Cell Method); isogeometric analysis (IGA).
OCT 2019 - MAR 2020	Scholarship on ADVANCED NUMERICAL METHODS WITH APPLICATION TO ADDITIVE MANUFACTURING, at the DEPARTMENT OF CIVIL ENGINEERING AND ARCHITECTURE, University of Pavia Research activity: Image-based numerical analysis for applications in powder bed fusion additive manufacturing technologies. Topology optimisation via isogeometric analysis.
MAY - OCT 2016	Scholarship on 3D PRINTING SIMULATION FOR BIOMEDICAL APPLICATIONS at the DEPARTMENT OF CIVIL ENGINEERING AND ARCHITECTURE, University of Pavia Research activity: Reduced order models for the simulation of metal 3D-printing processes using powder bed fusion technology.
NOV 2013 - APR 2016	Student Research Assistant (HiWi) at the CHAIR FOR COMPUTATION IN ENGINEERING, Technical University of Munich (TUM, Germany) Activity: Development and implementation of several numerical-analysis functionalities and algorithms within the <i>in-house</i> software <i>AdhoC++</i>, developed and maintained by the Simulation in Applied Mechanics research group (Prof. Dr.-Ing. Stefan Kollmannsberger)

EDUCATION

OCT 2016 - MAR 2020	Ph.D. in COMPUTATIONAL MECHANICS & ADVANCED MATERIALS under a joint supervision (co-tutelle) between the University of Pavia (Italy) and the Technical University of Munich (TUM, Germany), with a thesis entitled “Modelling, Validation, and Design for Additive Manufacturing: Applications of Numerical Methods to 3D Printing Processes”, Research activity: Development and implementation of numerical methods for the simulation of metal 3D-printing processes, through computational codes in C++ (AdhoC++), Matlab (GeoPDEs) and Python (FEniCs); topology optimisation with phase-field models; adaptive isogeometric analysis for <i>Trimmed Shell Elements</i>; Reduced Order Models (ROM). Participation in numerous national and international conferences, Summer and Winter schools. Research stays: Technical University of Munich, Germany (12 months), National Institute of Standards and Technology, USA (2 months), Technical University of Dresden, Germany (1 week). Supervisors: Prof. Ing. Alessandro REALI and Prof. Dr.rer.nat. Ernst RANK Co-Advisors: Prof. Ing. Ferdinando AURICCHIO, Prof. Dr.-Ing. Stefan KOLLMANNNSBERGER
SEP 2013 - APR 2016	Master of Science with Honours in COMPUTATIONAL MECHANICS, Technical University of Munich, Munich, Germany G.P.A.: 1.4 (german grading system) passed with distinction Major: Software Development within the Finite Element Method Thesis: “Reduced Order Method for Selective Laser Melting processes using the Finite Cell Method” pdf link Supervisor: Prof. Dr.rer.nat. Ernst RANK Advisor: Dr.-Ing. Stefan KOLLMANNNSBERGER, Ali Imran ÖZCAN, M.Sc.
SEP 2009 - DEC 2012	Bachelor Degree in MECHANICAL ENGINEERING Final grade: 108/110, University of Bologna, Bologna, Italy Thesis: “Finite element study of the connecting rod of a four cylinder engine for race applications.” Supervisor: Prof. Ing. Marco CARRICATO
SEP 2004 - JUL 2009	Liceo Scientifico “A. Righi” (High school degree), Bologna, Italy Final Grade: 100/100
SEP 2006 - SEP 2008	Higher-Certificate Diploma (electric bass) “Music Academy 2000”, Bologna, Italy

AWARDS, HONOURS AND APPOINTMENTS

SEP 2024	WINNER of the AIMETA JUNIOR AWARD 2024 IN SOLID AND STRUCTURAL MECHANICS.
NOV 2020	WINNER of the POSTER AWARD OF THE INTERNATIONAL CAE CONFERENCE AND EXHIBITION, Nov 30 - Dec 4, 2020.
OCT 2020 - PRESENT	Representative of the research fellows in the Council of the Department of Civil Engineering and Architecture (DICAr) of the University of Pavia.
JUL 2018	WINNER of the International Association for Computational Mechanics (IACM) award to attend the 13th World Congress on Computational Mechanics, New York City, USA, 22-27 July, 2018.
MAR - JUN 2018	Guest scientist at the Oskar von Miller Forum (Munich, Germany).
APR 2014 - APR 2016	Member of the Bavarian Graduate School of Computational Engineering - Elitenetzwerk Bayern BGCE homepage Thesis title: "Lagrange Multipliers in Contact Mechanics using the Finite Cell Method." Supervisor: Dipl.-Ing. Tino BOG
OCT 2007 - OCT 2008	Student representative at the Liceo Scientifico Augusto Righi, Bologna.

LANGUAGES

ENGLISH: Fluent (C2)
GERMAN: Intermediate (B2)
ITALIAN: Mother tongue
FRENCH: Beginner (A2)

REVIEWING ACTIVITY

Selected as a **reviewer** for the following international journals

1. Additive Manufacturing
2. Computer Methods in Applied Mechanics and Engineering
3. Finite Elements in Analysis & Design
4. Integrating Materials and Manufacturing Innovation
5. Optics and Laser Technology
6. International Journal for Numerical Methods in Engineering
7. International Journal of Heat and Mass Transfer
8. Symmetry
9. GAMM-Mitteilungen
10. Applied Sciences
11. Computers and Structures
12. Journal of Manufacturing and Materials Processing
13. Journal of Materials Science and Technology
14. Proceedings of the Institution of Mechanical Engineers, Part E: Journal of Process Mechanical Engineering
15. Engineering with Computers
16. Computers in Industry

17. Crystals
18. Advanced Modeling and Simulation in Engineering Sciences
19. Thin-walled Structures
20. Computer Aided Geometric Design

ORGANIZATION OF CONGRESSES AND EVENTS

Sep 2027	Co-organizer of the international congress Sim-AM VI ECCOMAS Thematic Conference on Simulation for Additive Manufacturing (Weimar, Germany)
Sep 2025	Member of the organizing committee of the international congress Sim-AM V ECCOMAS Thematic Conference on Simulation for Additive Manufacturing (Pavia, Italy)
Mar 2024	Member of the organizing committee of the Metal AMS 2024 congress, (Senlis, France)
2021	Organizer of the Invited Lectures on Modeling and Simulation for Additive Manufacturing (Online Seminars - link)
Sep 2019	Member of the organizing committee of the international congress VII International Conference on Isogeometric Analysis - IGA 2019 (Munich, Germany)
Sep 2019	Member of the organizing committee of the international congress Sim-AM 2nd ECCOMAS Thematic Conference on Simulation for Additive Manufacturing (Pavia, Italy)
May 2019	Member of the organizing committee of the international congress High-Order Finite Element and Isogeometric Methods - HOFEM 2019 (Pavia, Italy)
Oct 2017	Member of the organizing committee of the international congress Sim-AM 1st ECCOMAS Thematic Conference on Simulation for Additive Manufacturing (Munich, Germany)
Sep 2017	Member of the organizing committee of the international congress V International Conference on Isogeometric Analysis - IGA 2017 (Pavia, Italy)

MEMBER OF SCIENTIFIC COMMITTEES OF CONGRESSES

Feb 2022	2nd Workshop on Structural Integrity of Additively Manufactured Materials - SIAMM22, Brno, Czech Republic, 4-5 February 2022.
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ORGANIZATION OF THEMATIC SESSIONS AND CHAIRMANSHIP

Jul 2026	Organizer of the symposium <i>Modelling and Simulations of Additively Manufactured Metamaterials</i> at the international congress 17th World Congress on Computational Mechanics & 10th ECCOMAS Congress (WCCM-ECCOMAS 2026) (Munich, Germany, 19 - 24 July 2026)
Jul 2026	Organizer of the Special Technology Session (STS) <i>Additive Manufacturing in Industry: Open Challenges and Future Perspective</i> at the international congress 17th World Congress on Computational Mechanics & 10th ECCOMAS Congress (WCCM-ECCOMAS 2026) (Munich, Germany, 19 - 24 July 2026)
May 2025	Organizer of the symposium <i>Multi-physics Simulations of Metamaterials</i> at the international congress XI International Conference on Computational Methods for Coupled Problems in Science and Engineering (COUPLED PROBLEMS 2025) (Villasimius, Sardinia, Italy, 26 - 29 May 2025)
Jun 2024	Organizer of the symposium <i>Modelling and Simulations of Additively Manufactured Metamaterials</i> at the international congress IX European Congress on Computational Methods in Applied Sciences and Engineering ECCOMAS 2024 (Lisbon, Portugal)
Jun 2024	Organizer of the Special Technology Session <i>Additive Manufacturing in Industry: Open Challenges and Future Perspective</i> at the international congress IX European Congress on Computational Methods in Applied Sciences and Engineering ECCOMAS 2024 (Lisbon, Portugal)
Jul 2023	Organizer of the symposium <i>Process-structure-Properties Relationship in Laser-based Powder Bed Fusion of Metals</i> at the international congress IV International Conference on Simulation for Additive Manufacturing Sim-AM 2023 (Munich, Germany)
Jun 2023	Organizer of the symposium <i>Numerical methods for Additive Manufacturing</i> at the international congress YIC 2022 (Porto, Portugal)
Sep 2022	Organizer of the symposium <i>Additive Manufacturing: Challenges and Perspectives</i> at the international congress GIMC-SIMAI YOUNG 2022 (Pavia, Italy)
Jul 2022	Co-Organizer of the symposium <i>Modeling and Simulation for Additive Manufacturing</i> at the international congress WCCM 2022: 15th World Congress on Computational Mechanics (Yokohama, Japan - online event)
Jun 2021	Chairman of the symposium <i>Coupled Simulations for Additive Manufacturing</i> at the international congress IX International Conference on Computational Methods for Coupled Problems in Science and Engineering (COUPLED PROBLEMS 2021) (online event)

PARTICIPATION IN RESEARCH PROJECTS

2024 - PRESENT	M.A.R.S. Firefighter project (ID 6045861), Lombardy Region (PR FESR 2021-2027, Collabora & Innova) - Role: Team leader
2024 - PRESENT	SPIN project (ID 6149950), Lombardy Region (PR FESR 2021-2027, Collabora & Innova) - Role: Team member (coordinator: F. Auricchio)
SEP 2019 - SEP 2022	Research Projects of Significant National Interest (PRIN) of the Italian Ministry of Education, University and Research XFAST-SIMS: Extra fast and accurate simulation of complex structural problem - Role: Team member (coordinator: A. Reali)
JAN 2020 - DEC 2020	GNCS Research Project - National Institute of Advanced Mathematics Advanced Numerical Techniques for Industrial Applications - Role: Team member (coordinator: S. Perotto)

INSTITUTIONAL RESPONSIBILITIES

	2025	President of the Ph.D. committee of Iñaki Setien (thesis: <i>Enhanced Inherent Strain Modelling for Powder-Based Metal Additive Manufacturing</i>) at the Universitat Politècnica de Catalunya (UPC), Barcelona, Spain
	2024	Member of the Ph.D. committee of Carlos A. Moreira at the Universitat Politècnica de Catalunya (UPC), Barcelona, Spain
FEB 2024 - PRESENT		Manager (Administrator) of the HPC server of the Department of Civil Engineering and Architecture of the University of Pavia
	2023	President of the Ph.D. committee of Michele Torre at the University of Pavia
FEB 2022 - PRESENT		Member of the Student Records Evaluation Committee of the Master's Degree in Civil Engineering
FEB 2022 - PRESENT		Member of the Council of the Department of Civil Engineering and Architecture, University of Pavia
	JUL 2022	Member of a Ph.D. committee at the Universitat Politècnica de Catalunya, Barcelona, Spain

TEACHING ACTIVITY

SEP 2026 - PRESENT	Lecturer of the course Mechanics of Solid and Structures (in English) (6 CFU)
SEP 2023 - PRESENT	Lecturer of the course Mechanics of Solids and Structures (6 CFU)
SEP 2021 - PRESENT	Lecturer of the course Nonlinear Computational Mechanics (3 CFU)
OCT 2020 - MAR 2021	Tutor of the Structural Dynamics course (Prof. Reali, University of Pavia)
APR 2015 - JUL 2015	Tutor of the Computation in Engineering II course (Prof. Rank, Technical University of Munich)
OCT 2014 - FEB 2015	Tutor of the Computation in Engineering I course (Prof. Rank, Technical University of Munich)

THESIS SUPERVISION ACTIVITY

SEP 2022 - SEP 2025	Ph.D. Advisor of Greta Mangiameli
SEP 2022 - PRESENT	Ph.D. Advisor of Simone Accogli
SEP 2022 - SEP 2025	Ph.D. Advisor of Mihaela Chiappetta
SEP 2016 - PRESENT	Supervision of 2 Bachelor's theses in Industrial Engineering at the University of Pavia
SEP 2016 - PRESENT	Supervision of 3 Master's theses in Civil Engineering at the University of Pavia
SEP 2025 - PRESENT	Supervision of 1 Master's thesis in Computational Engineering and Modelling at the University of Pavia

COMPUTER SKILLS

Intermediate knowledge:	C#, RHINO, Mathematica, Maple
Advanced knowledge:	C++, MATLAB, Python, ParaView, ANSYS, ABAQUS, LINUX, L ^A T _E X

List of Publications

ARTICLES IN INTERNATIONAL JOURNALS

1. **M. Carraturo**, S. Kollmannsberger, A. McBride, S. Morganti; Editorial—Modelling, simulation, design and testing for additive manufacturing, *Progress in Additive Manufacturing* 10, pp. 4105–4106 (2025).
<https://doi.org/10.1007/s40964-025-01162-w>.
2. U. Gebhardt, **M. Carraturo**, A. Raßloff, G. Alaimo, F. Auricchio, M. Kästner; Accessing process-property linkages of polyamide 12 manufactured by the multi jet fusion printing process, *Progress in Additive Manufacturing* 10, pp. 4227–4238 (2025).
<https://doi.org/10.1007/s40964-025-01149-7>.
3. M. Chiappetta, C. Piazzola, L. Tamellini, A. Reali, F. Auricchio, **M. Carraturo**; Data-informed uncertainty quantification for laser-based powder bed fusion additive manufacturing, *International Journal for Numerical Methods in Engineering* 125:20, e7542 (2024).
<https://doi.org/10.1002/nme.7542>.
4. **M. Carraturo**, M. Torre, C. Giannelli, A. Reali; An isogeometric approach to coupled thermomechanics in 3D via hierarchical adaptivity, *Computers and Mathematics with Applications* 165, pp. 34–53 (2024).
<https://doi.org/10.1016/j.camwa.2024.02.050>.
5. M. Montemurro, G. Alaimo, E. Panettieri, A. Catapano, **M. Carraturo**, F. Auricchio; Design of multi-material structures using material jetting technology: Topology optimisation, numerical analysis and experiments, *Composite Structures* 330, 117838 (2024).
<https://doi.org/10.1016/j.compstruct.2023.117838>.
6. F. Auricchio, **M. Carraturo**, G. Toscani, M. Zanella; Impact of interaction forces in first order many-agent systems for swarm manufacturing, *Discrete and Continuous Dynamical Systems* 17:1, pp. 78 - 97 (2024).
[10.3934/dcdss.2023173](https://doi.org/10.3934/dcdss.2023173).
7. M. Chiappetta, C. Piazzola, **M. Carraturo**, L. Tamellini, A. Reali, F. Auricchio; Sparse-grids uncertainty quantification of part-scale additive manufacturing processes, *International Journal of Mechanical Sciences* 256, 108476 (2023).
<https://doi.org/10.1016/j.ijmecsci.2023.108476>.
8. P. Magarò, G. Alaimo, **M. Carraturo**, E. Sgambitterra, C. Maletta; A novel methodology for the prediction of the stress-strain response of laser powder bed fusion lattice structure based on a multi-scale approach, *Material Science and Engineering: A* 863, 144526 (2023).
<https://doi.org/10.1016/j.msea.2022.144526>.
9. **M. Carraturo**, A. Viguerie, A. Reali, F. Auricchio; Two-level method part-scale thermal analysis of laser powder bed fusion additive manufacturing, *Engineering with Computers* 38, 4815–4828 (2022).
<https://doi.org/10.1007/s00366-022-01669-8>.
10. A. Viguerie, **M. Carraturo**, A. Reali, F. Auricchio; A spatiotemporal two-level method for high-fidelity thermal analysis of laser powder bed fusion, *Finite Elements in Analysis and Design* 210, 103815 (2022).
<https://doi.org/10.1016/j.finel.2022.103815>.
11. A. Patton, **M. Carraturo**, F. Auricchio, A. Reali; Cost-effective and accurate interlaminar stress modeling of composite Kirchhoff plates via immersed isogeometric analysis and equilibrium, *Journal of Mechanics* 38, 32–43 (2022).
<https://doi.org/10.1093/jom/ufac005>.

12. **M. Carraturo**, S. Kollmannsberger, A. Reali, F. Auricchio and E. Rank; An immersed boundary approach for residual stress evaluation in selective laser melting processes, *Additive Manuf.* 46 (2021) 102077.
<https://doi.org/10.1016/j.addma.2021.102077>.
13. **M. Carraturo**, P. Hennig, G. Alaimo, L. Heindel, F. Auricchio, M. Kastner, A. Reali; Additive Manufacturing Applications of Phase-field-based Topology Optimization using Adaptive Isogeometric Analysis; *GAMM-Mitteilungen* (2021), e202100013
<https://doi.org/10.1002/gamm.202100013>.
14. G. Alaimo, **M. Carraturo**, N. Korshunova, S. Kollmannsberger; Numerical evaluation of high cycle fatigue life for additively manufactured stainless steel 316L lattice structures: Preliminary considerations, *Mat Design Process Comm.* (2021),
<https://doi.org/10.1002/mdp2.249>.
15. N. Korshunova, G. Alaimo, S. Hosseini, **M. Carraturo**, A. Reali, J. Niiranen, F. Auricchio, E. Rank, S. Kollmannsberger; Bending behavior of octet-truss lattice structures: Modelling options, numerical characterization and experimental validation, *Material & Design* 205 (2021) 109693,
<https://doi.org/10.1016/j.matdes.2021.109693>.
16. **M. Carraturo**, G. Alaimo, S. Marconi, et al.; Experimental and Numerical Evaluation of Mechanical Properties of 3D-Printed Stainless Steel 316L Lattice Structures. *J. of Materi. Eng. and Perform.* (2021),
<https://doi.org/10.1007/s11665-021-05737-w>.
17. N. Korshunova, G. Alaimo, S. Hosseini, **M. Carraturo**, A. Reali, J. Niiranen, F. Auricchio, E. Rank, S. Kollmannsberger; Image-based numerical characterization and experimental validation of tensile behavior of octet truss lattice structures, *Additive Manuf.* 41 (2021) 101949,
<https://doi.org/10.1016/j.addma.2021.101949>.
18. **M. Carraturo**, B. M. Lane, H. Yeung, S. Kollmannsberger, A. Reali and F. Auricchio; Numerical evaluation of advanced laser control strategies: Influence on residual stresses for laser powder bed fusion systems, *Integr Mater Manuf Innov* (2020),
<https://doi.org/10.1007/s40192-020-00191-3>.
19. **M. Carraturo**, J. Jomo, S. Kollmannsberger, A. Reali, F. Auricchio and 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),
<https://doi.org/10.1016/j.addma.2020.101498>.
20. L. Coradello, D. D'Angella, **M. Carraturo**, J. Kiendl, S. Kollmannsberger, E. Rank and A. Reali; Hierarchically refined isogeometric analysis of trimmed shells, *Computational Mechanics*, 66: 431-447 (2020),
<https://doi.org/10.1007/s00466-020-01858-6>.
21. F. Auricchio, E. Bonetti, **M. Carraturo**, D. Hömberg, A. Reali and 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),
<https://doi.org/10.1142/S0218202520500281>.
22. **M. Carraturo**, E. Rocca, E. Bonetti, D. Hömberg, A. Reali and F. Auricchio; Graded-material design based on phase-field and topology optimization, *Computational Mechanics*, 64(6): 1598-1600 (2019),
<https://doi.org/10.1007/s00466-019-01736-w>.

23. S. Kollmannsberger, **M. Carraturo**, A. Reali and F. Auricchio; Accurate Prediction of Melt Pool Shapes in Laser Powder Bed Fusion by the Non-Linear Temperature Equation Including Phase Changes, *Integr Mater Manuf Innov*, 8: 167-177 (2019), <https://doi.org/10.1007/s40192-019-00132-9>.
24. **M. Carraturo**, C. Giannelli, A. Reali and 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* **348**: 660-679 (2019) <https://doi.org/10.1016/j.cma.2019.01.044>.
25. S. Kollmannsberger, A. Özcan, **M. Carraturo**, N. Zander, E. Rank; A hierarchical computational model for moving thermal loads and phase changes with applications to Selective Laser Melting; *Computers & Mathematics with Applications* 75(8): 1483-1497 (2018), <https://doi.org/10.1016/j.camwa.2017.11.014>.

BOOK CHAPTERS

1. S. Marconi, **M. Carraturo**, G. Alaimo, S. Morganti, G. Scalet, M. Conti, A. Reali, F. Auricchio ; Additive manufacturing: Challenges and opportunities for structural mechanics, in 50+ Years of AIMETA: A Journey Through Theoretical and Applied Mechanics in Italy, pp. 437–451. Springer (2022)
2. S. Kollmannsberger, D. D’Angella, **M. Carraturo**, A. Reali, F. Auricchio, E. Rank; The Finite Cell Method for Simulation of Additive Manufacturing, in Non-standard Discretisation Methods in Solid Mechanics, pp. 355–375. Springer (2022)
3. F. Garotta, N. Demo, M. Tezzele, **M. Carraturo**, A. Reali and G. Rozza; (eds) Quantification of Uncertainty: Improving Efficiency and Technology. Lecture Notes in Computational Science and Engineering, vol 137., pp. 153–170, Springer (2020)

PLENARY LECTURES

1. **M. Carraturo**; Applications of Immersed Boundary Methods for Laser Powder Bed Fusion Additive Manufacturing, *IV International Conference on Simulation for Additive Manufacturing* (Sim-AM 2023), Munich, Germany, 26 - 28 July, 2023.

INVITED PRESENTATIONS AT INTERNATIONAL CONFERENCES, WORKSHOPS AND SEMINARS

1. **10th International Workshop on High-Order Finite Element and Isogeometric Methods** (HOFEIM 2026), Siena, Italy, 25 - 28 May 2026.
2. **Winterseminar** organized by the Bauhaus-Universität Weimar, Germany, 2022, 2023, 2024, 2025 and 2026.
3. **Lorentz workshop on generative AI in design optimization**, Leiden, Netherlands, June 2025.
4. **Dagstuhl Seminar 24241: Geometric modeling: Challenges for Additive Manufacturing, Design and Analysis**, Dagstuhl, Germany, 9 - 14 June 2024. Published as part of the seminar volume in the periodical series *Dagstuhl Reports* (<http://www.dagstuhl.de/dagrep>).
5. **Metal AMS 2024**, Senlis, France, 20 - 21 March, 2024. **M. Carraturo**; Process Modelling and Uncertainty Quantification in Laser-based Powder Bed Fusion of Metals.

6. **High-Order Finite Element and Isogeometric Methods Workshop**(HOFEIM 2023), Larnaca, Cyprus, 29 May - 1 June, 2023. **M. Carraturo**; Modeling, Calibration, and Validation of Powder Bed Fusion Process Simulations using the Finite Cell Method.
7. **New trends and future challenges in Additive Manufacturing**, Parma, 11 July, 2022. **M. Carraturo**; Immersed Boundary Methods for Laser Powder Bed Fusion Simulations.
8. **III International Conference on Simulation for Additive Manufacturing** (Sim-AM 2021), Virtual, 31 August - 2 September, 2021. **M. Carraturo**, A. Viguerie, A. Reali and F. Auricchio; Applications of the Two-level Method in Laser Powder Bed Fusion Process Simulations.
9. **First Workshop on Computational Modeling and Simulation of Additive Manufacturing** Virtual, 21 - 22 June, 2021. **M. Carraturo**; Immersed thermo-mechanical analysis of selective laser melting processes.
10. **First Workshop on Computational Modeling and Simulation of Additive Manufacturing** Virtual, 21 - 22 June, 2021. **M. Carraturo**; Modeling and validation of additive manufactured stainless steel 316L lattice.
11. **International CAE Conference and Exhibition**, Nov. 31 - Dec. 4, 2020. **M. Carraturo**, J. Jomo, S. Kollmannsberger, A. Reali, F. Auricchio and E. Rank; Immersed finite element analysis of laser powder bed fusion process: Modeling and experimental validation.
12. **High-Order Finite Element and Isogeometric Methods Workshop** (HOFEIM 2019), Pavia, Italy, 28-31 May, 2019. F. Auricchio, **M. Carraturo**, C. Giannelli, S. Kollmannsberger, E. Rank, A. Reali and R. Vázquez; Adaptive Isogeometric Thermal Analysis for Additive Manufacturing Processes.

CONFERENCE PROCEEDINGS AND PRESENTATIONS (SPEAKER)

1. **M. Carraturo**, P. Kopp. Modeling and validation of an immersed boundary framework for PBF-LB/M process simulations of TPMS structures. 17th World Congress on Computational Mechanics & 10th ECCOMAS Congress (WCCM-ECCOMAS 2026) (Munich, Germany, 19 - 24 July 2026)
2. **M. Carraturo**, P. Kopp. High-fidelity Thermomechanical Modeling of Laser-based Powder Bed Fusion of Metal Process using Immersed Boundary Method. XI International Conference on Computational Methods for Coupled Problems in Science and Engineering (COUPLED PROBLEMS 2025) (Villasimius, Sardinia, Italy, 26 - 29 May 2025)
3. **M. Carraturo**, P. P. Breese, S. Oster, Thermal Model for Laser-based Powder Bed Fusion of Metal Process: Modelling, Calibration, and Experimental Validation. In *Proceedings of the IV International Conference for Additive Manufacturing* (2023). DOI:10.23967/c.simam.2023.015
4. **M. Carraturo**, G. Alaimo, A. Reali, and F. Auricchio; Numerical and experimental characterization of 3D printed lattice structures, *VII ECCOMAS Young Investigators Conference (YIC2023)*, Porto, Portugal, 19 - 21 June 2023.
5. M. Chiappetta, C. Piazzola, **M. Carraturo**, L. Tamellini, A. Reali, and F. Auricchio; Application of Multi-Index Stochastic Collocation to Part-scale Thermomechanical Analysis of Laser-based Powder Bed Fusion of Metals, *X International Conference on Computational Methods for Coupled Problems in Science and Engineering (COUPLED PROBLEMS 2023)*, Chania, Crete, Greece, 5 - 7 June 2023.

6. **M. Carraturo**, S. Kollmannsberger, A. Viguerie, E. Rank, A. Reali, and F. Auricchio; Immersed Boundary Methods for Laser Powder Bed Fusion Process Simulations, *15th World Congress on Computational Mechanics (WCCM-XV) 8th Asian Pacific Congress on Computational Mechanics (APCOM-VIII)*, Yokohama, Japan (virtual), 31 July – 5 August 2022.
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