

CURRICULUM VITAE et STUDIORUM

Giancarlo Sangalli

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Università di Pavia
Dipartimento di Matematica
Via Ferrata, 1
27100 Pavia, Italy

tel.: +39 0382 985623
tel.: +39 0382 984612
e-mail: giancarlo.sangalli@unipv.it
web: <http://www-dimat.unipv.it/sangalli>

ACADEMIC DEGREES

28th January 2002:

Ph.D. in Mathematics, University of Pavia; advisor: Prof. Franco Brezzi.

15th January 1997:

B.S. in Mathematics (cum laude), University of Pavia.

ACADEMIC POSITIONS

since 1/2016:

Full Professor in Numerical Analysis, University of Pavia.

11/2005–1/2016:

Associate Professor in Numerical Analysis, University of Pavia.

since 2005:

Research associate at the Istituto di Matematica Applicata e Tecnologie Informatiche “E. Magenes” – C.N.R., Pavia.

7/2001–10/2005:

Researcher at the Istituto di Matematica Applicata e Tecnologie Informatiche “E. Magenes” – C.N.R., Pavia.

VISITING POSITIONS (LONGER THAN ONE MONTH)

- since 2004: repeated research visits to the Institute for Computational Engineering and Sciences (ICES) in Austin (TX, USA), including a nine-month visit in 2004–2005;
- I visited the Institute for Scientific Computation, Texas A.&M. University, College Station, TX (USA), in October 2001.
- I visited the Oxford University Computing Laboratory, Oxford (UK), in April–May 1999.

SCIENTIFIC COMMITTEES AND INSTITUTIONS

- 2021–2025: Director of the Gruppo Nazionale Calcolo Scientifico (GNCS-INDAM);
- 2017–2025: member of the Scientific Committee of the Gruppo Nazionale Calcolo Scientifico (GNCS-INDAM);
- since 2020: member of Gruppo 2003 per la ricerca scientifica;
- since 2019: member of the European Academy of Sciences;
- since 2018: member of the RICAM Scientific Advisory Board;
- 2015–2025: member of the Scientific Committee of the Fondazione Alma Mater Ticinensis;
- since 2011: member of the ECCOMAS Computational Applied Mathematics Committee.

INSTITUTIONAL RESPONSIBILITIES

- since 2025: Vice Rector for Research, University of Pavia;
- 2020–2024: degree coordinator for the Laurea Magistrale (Master) in Matematica, University of Pavia;
- since 2015: member of the teaching committee of the joint Ph.D. program in Mathematics (University of Milano-Bicocca, University of Pavia, and INdAM);
- 2005–2025: member of the IT Committee, Department of Mathematics, University of Pavia;

RESEARCH INTERESTS

- Isogeometric analysis
- Theory and application of FEMs
- SciML

RESEARCH GRANTS AND CONTRACTS (SELECTED)

- 2023–2025: Principal Investigator of the PRIN 2022 PNRR project “Next generatiOn numerical Technologies for dEsign and Simulation - NOTES”;
- 2022–2024: local (UNIPV) coordinator of the PNRR “Centro Nazionale di Ricerca in High Performance Computing, Big Data e Quantum Computing” for Spoke 6, “Multiscale Modeling and Engineering Applications”;
- 2014–2020: Principal Investigator of the **ERC FP7 Consolidator Grant** “HIGEOM – Highly accurate Isogeometric Method”;
- 2010–2014: Principal Investigator of the **FIRB** (highly-selective young investigator Italian MIUR grant) project “Isogeometric Discretizations in Continuum Mechanics”;
- 2012–2016: Principal Investigator of the industrial research program TOTAL–DS–2753 “Isogeometric Analysis for large deformation incompressible problems” funded by Hutchinson S.A. – Total S.A. (France);

AWARDS

2021 Appointed Knight (“Cavaliere”) of the “Order of Merit of the Italian Republic” by the President of the Italian Republic.

ORGANIZATION OF CONFERENCES AND WORKSHOPS (SELECTED)

- 25–28/6/2026: co-chair and member of the Scientific Committee of the 10th International Workshop on High-Order Finite Element and Isogeometric Methods (HOFEIM-2026), Siena;
- 14–17/9/2025: member of the Steering Committee and Scientific Committee of IGA2025, Eindhoven, The Netherlands;
- 27–30/10/2024: member of the Steering Committee and Scientific Committee of IGA2024, St. Augustine, Florida, USA;
- 18–21/6/2023: member of the Steering Committee and Scientific Committee of IGA2023, Lyon, France;
- 29/5–1/6/2019: member of the Scientific Committee of the 9th International Workshop on High-Order Finite Element and Isogeometric Methods (HOFEIM-2023), Larnaca, Cyprus;
- 6–9/11/2022: member of the Steering Committee and Scientific Committee of IGA2022, Banff;
- 26–29/9/2021: member of the Steering Committee and Scientific Committee of VIGA2021 (hosted virtually due to COVID-19);
- 11–12/8/2020: member of the Steering Committee and Scientific Committee of IGA2020, Banff (hosted virtually due to COVID-19);
- 18–20/9/2019: member of the Steering Committee and Scientific Committee of IGA2019, Munich;
- 28–31/5/2019: chair and member of the Scientific Committee of “Higher Order Finite Element and Isogeometric Methods” Workshop (HOFEIM 2019);
- 24/1–1/3/2019: co-organizer of the BIRS Workshop on “Isogeometric Splines: Theory and Applications” in Banff;
- 11–15/6/2018: member of the scientific committee of the ECCM–ECFD 2018 6th European Conference on Computational Mechanics and 7th European Conference on Computational Fluid Dynamics, Glasgow, UK;
- 10–13/9/2017: co-chair and organizer of IGA2017 in Pavia;
- 20–25/7/2014: member of the scientific committee of the World Congress on Computational Mechanics XI – European Conference on Computational Mechanics V – European Conference on Computational Fluid Dynamics VI, Barcelona (Spain);
- 18–23/6/2012: co-organizer of the CIME School in “Isogeometric Analysis”, Cetraro, Italy;
- 27–29/6/2011: member of the scientific committee of the ECCOMAS Thematic Conference “Higher Order Finite Element and Isogeometric Methods” (HOFEIM 2011) in Krakow, Poland;

- 29/6/2010–2/7/2010: co-organizer of the workshop “Non-Standard Numerical Methods for PDEs”, in Pavia;
- 9/2009: member of the scientific committee and co-organizer of the international congress *Numerical Methods for Multi-material Fluids and Structures* in Pavia;
- co-organizer of several minisymposia at international congresses.

TEACHING AT GRADUATE LEVEL

- 2025: Ph.D. course on “Advances in Numerical Methods in Scientific Computing”, Ph.D. program in Mathematics, University of Pavia (lecturers: Carlo Marcati and Giancarlo Sangalli);
- 2025: Ph.D. course on “Advances in Numerical Methods in Scientific Computing”, Cetraro (Italy);
- 7/2017: CIME summer school on “Splines and PDEs: Recent Advances from Approximation Theory to Structured Numerical Linear Algebra”, Cetraro (Italy);
- 2014 & 2016: ECCAM advanced school on “Isogeometric Analysis Fundamentals and Applications”;
- 2013: EWM summer school on “Isogeometric Analysis”, I.C.P.T. Trieste (Italy);
- 2007–2011: course on “Metodi numerici per le equazioni differenziali”, for the Ph.D. program in “Matematica per le Tecnologie Industriali e la Finanza”, Scuola Normale Superiore di Pisa;
- since 2010: biennial advanced school on “Nonlinear Computational Solid & Structural Mechanics” (lecturers: F. Auricchio, M. Bischoff, F. Brezzi, A. Reali, G. Sangalli and R.L. Taylor), Pavia;

TEACHING AT UNDERGRADUATE LEVEL

- 2013–present: Numerical Methods in Engineering Sciences for students in Engineering (Laurea Magistrale), Pavia;
- 2013–present: Elementi Finiti for students in Mathematics (Laurea Magistrale), Pavia;
- 2018–2020: Advanced Numerical Methods for PDEs, for students in Mathematics at Pavia;
- 2015–2018: Analisi Numerica 1 for students in Mathematics at Pavia;
- 2010–2020: Metodi Elementi Finiti ed Applicazioni for students in Engineering at Pavia;
- 2006–2015: various courses of Mathematical Analysis and Calculus for students in Engineering at Pavia.

SELECTED INVITED LECTURES

- 14–17/9/2025: Plenary lecture at IGA2025, Eindhoven, The Netherlands;
- 24–28/6/2024: Plenary lecture at the XXVIII Congress of Differential Equations and Applications / XVIII Congress of Applied Mathematics (CEDYA/CMA), Bilbao;
- 28–31/1/2024: Plenary lecture at the 28th Int. Conference on Domain Decomposition Methods (DD28), KAUST, Saudi Arabia;
- 29–30/9/2022: Plenary lecture at GIMC-SIMAI Young 2022, Pavia;

- 9/3/2021: Australian Seminar on Computational Mathematics (hosted virtually due to COVID-19);
- 11–12/8/2020: Plenary lecture at IGA2020, Banff (hosted virtually due to COVID-19);
- 17–19/7/2017: Semi-plenary lecture at the “FoCM 2017: Workshop on Foundations of Numerical PDEs”, Barcelona;
- 5–7/4/2017: Semi-plenary lecture at the “19th International Conference on Finite Elements in Flow Problems – FEF 2017”, Rome;
- 5–10/6/2016: Semi-plenary lecture at the “ECCOMAS Congress 2016”, Crete;
- 23–28/6/2016: Plenary lecture at the “9th International Conference on Mathematical Methods for Curves and Surfaces”, Tonsberg, Norway.
- 12–14/10/2015: Plenary lecture at GDSPM 2015, Salt Lake City (USA).
- 24–27/2/2013: invited (keynote) lecture at the “Advances in Computational Mechanics (ACM 2013) – A Conference Celebrating the 70th Birthday of Thomas J.R. Hughes”, San Diego, USA;
- 6–10/2/2012: invited (1h) lecture at the workshop “High-Order Numerical Approximation for Partial Differential Equations”, Bonn, Germany;
- 19–23/9/2011: invited (1h) lecture at the conference “Modern Techniques in the Numerical Solution of Partial Differential Equations”, Heraklion, Greece;
- 25–28/7/2011: keynote lecture at USNCCM-11, Minneapolis (USA);
- 7–9/4/2010: invited (1h) lecture at the international workshop: “Variational PDEs and level set methods in image processing and shape optimization”, Obergurgl (Austria);

BIBLIOMETRICS

- 2019: included in the list of **Highly Cited Researchers** by Clarivate/ISI;
- <http://www.webofscience.com/wos/author/record/B-7186-2011> (H-index: 39)
- <https://scholar.google.it/citations?user=DTsd9jYAAAAJ&hl=en> (H-index: 44)

SELECTED PAPERS

- [1] Y. Bazilevs, L. Beirão da Veiga, J. A. Cottrell, T. J. R. Hughes, and G. Sangalli. Isogeometric analysis: approximation, stability and error estimates for h -refined meshes. *Math. Models Methods Appl. Sci.*, 16(7):1031–1090, 2006.
- [2] T. J. R. Hughes and G. Sangalli. Variational multiscale analysis: the fine-scale Green’s function, projection, optimization, localization, and stabilized methods. *SIAM J. Numer. Anal.*, 45(2):539–557, 2007.
- [3] T. J. R. Hughes, A. Reali, and 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. *Comput. Methods Appl. Mech. Engrg.*, 197(49-50):4104–4124, 2008.
- [4] F. Auricchio, L. Beirão da Veiga, T. J. R. Hughes, A. Reali, and G. Sangalli. Isogeometric collocation methods. *Math. Models Methods Appl. Sci.*, 20(11):2075–2107, 2010.
- [5] A. Buffa, G. Sangalli, and R. Vázquez. Isogeometric analysis in electromagnetics: B-splines approximation. *Comput. Methods Appl. Mech. Engrg.*, 199(17-20):1143–1152, 2010.
- [6] T. J. R. Hughes, A. Reali, and G. Sangalli. Efficient quadrature for NURBS-based isogeometric analysis. *Comput. Methods Appl. Mech. Engrg.*, 199(5-8):301–313, 2010.
- [7] L. Beirão da Veiga, A. Buffa, J. Rivas, and G. Sangalli. Some estimates for h - p - k -refinement in isogeometric analysis. *Numer. Math.*, 118(2):271–305, 2011.
- [8] A. Buffa, C. de Falco, and G. Sangalli. IsoGeometric Analysis: stable elements for the 2D Stokes equation. *Internat. J. Numer. Methods Fluids*, 65(11-12):1407–1422, 2011.
- [9] A. Buffa, J. Rivas, G. Sangalli, and R. Vázquez. Isogeometric discrete differential forms in three dimensions. *SIAM J. Numer. Anal.*, 49(2):818–844, 2011.
- [10] L. Beirão da Veiga, A. Buffa, G. Sangalli, and R. Vázquez. Mathematical analysis of variational isogeometric methods. *Acta Numer.*, 23:157–287, 2014.
- [11] Hector Gomez, Alessandro Reali, and Giancarlo Sangalli. Accurate, efficient, and (iso)geometrically flexible collocation methods for phase-field models. *J. Comput. Phys.*, 262:153–171, 2014.
- [12] Annabelle Collin, Giancarlo Sangalli, and Thomas Takacs. Analysis-suitable G^1 multi-patch parametrizations for C^1 isogeometric spaces. *Comput. Aided Geom. Design*, 47:93–113, 2016.
- [13] F. Calabrò, G. Sangalli, and M. Tani. Fast formation of isogeometric Galerkin matrices by weighted quadrature. *Comput. Methods Appl. Mech. Engrg.*, 316:606–622, 2017.
- [14] René R. Hiemstra, Giancarlo Sangalli, Mattia Tani, Francesco Calabrò, and Thomas J. R. Hughes. Fast formation and assembly of finite element matrices with application to isogeometric linear elasticity. *Comput. Methods Appl. Mech. Engrg.*, 355:234–260, 2019.

- [15] Gabriele Loli, Monica Montardini, Giancarlo Sangalli, and Mattia Tani. An efficient solver for space-time isogeometric Galerkin methods for parabolic problems. *Comput. Math. Appl.*, 80(11):2586–2603, 2020.
- [16] S. Frascini, G. Loli, A. Moiola, and G. Sangalli. An unconditionally stable space-time isogeometric method for the acoustic wave equation. *Comput. Math. Appl.*, 169:205–222, 2024.