

07/2023 – Today **Non-tenure track Assistant Professor (RTDa)** Università degli Studi di Pavia
Department of Mathematics

EDUCATION

2017–2020 **Ph.D. in Mathematics** Università degli Studi di Pavia
Thesis: Efficient solvers for Isogeometric Analysis. Supervisors: Giancarlo Sangalli (Università degli Studi di Pavia) and Annalisa Buffa (EPFL).

2015–2018 **Diploma IUSS di licenza (Eccellente)** Scuola Universitaria Superiore IUSS (Pavia)
Thesis: Round-off error analysis of the isogeometric method. Supervisor: Giancarlo Sangalli (Università degli Studi di Pavia).

2015–2017 **Master in Mathematics (110/110 cum laude)** Università degli studi di Pavia
Thesis: A Sylvester equation based preconditioner for the isogeometric advection-diffusion problem. Supervisor: Giancarlo Sangalli and Mattia Tani (Università degli Studi di Pavia).

2012–2016 **Diploma IUSS di primo livello (Eccellente)** Scuola Universitaria Superiore IUSS (Pavia)
Thesis: The isoperimetric inequality for the entropy and its consequences. Supervisor: Giuseppe Toscani (Università degli Studi di Pavia).

2012–2015 **Bachelor Mathematics (110/110)** Università degli studi di Pavia
Thesis: Classical interpolation inequalities. Supervisor: Pierluigi Colli (Università degli Studi di Pavia).

Since 2012 **Fellow of Collegio Ghislieri**
Pavia

WORK EXPERIENCES

12/2020 – 06/2023 **Research Assistant** Università degli Studi di Pavia
Department of Mathematics

VISITING POSITIONS

01/2020–03/2020 **École Polytechnique Fédérale de Lausanne, Institute of Mathematics (EDMA)**
Invited as a visiting PhD Student by Annalisa Buffa.

PUBLICATIONS

An Isogeometric Shape Optimization method for groundwater flow in porous media

A. Bressan, G. Loli, S. Manenti, A. Reali, G. Sangalli. Computer & Mathematics with Applications. Volume 162, Pages 104-119 (2024).

High-Order Spline Upwind for Space-Time Isogeometric Analysis

G. Loli, G. Sangalli, P. Tesini. Computer Methods in Applied Mechanics and Engineering. Volume 417, 116408 (2023).

Easy and Efficient preconditioning of the Isogeometric Mass Matrix

G. Loli, G. Sangalli, M. Tani. Computer & Mathematics with Applications. Volume 116, Pages 245-264 (2022).

Explicit high-order generalized- α methods for isogeometric analysis of structural dynamics

P. Behnoudfar, G. Loli, A. Reali, G. Sangalli, V. M. Calo. Computer Methods in Applied Mechanics and Engineering. Volume 389, 114344 (2022).

A projected super-penalty method for the C^1 -coupling of multi-patch isogeometric Kirchhoff plates

L. Coradello, G. Loli, A. Buffa. Computational Mechanics. Volume 67, 4, Pages 1133-1153 (2021).

An efficient solver for space-time isogeometric Galerkin methods for parabolic problems

G. Loli, M. Montardini, G. Sangalli, M. Tani. Computer & Mathematics with Applications. Volume 80, Issue 11, Pages 2586-2603 (2020).

Quadrature Rules in the Isogeometric Galerkin Method: State of the Art and an Introduction to Weighted Quadrature

F. Calabrò, G. Loli, G. Sangalli, M. Tani. Giannelli C. and Speleers H. (eds.) Advanced Methods for Geometric Modeling and Numerical Simulation. Springer International Publishing, pp. 43-55 (2019).

PREPRINTS

Parallelization in time by diagonalization

A. Bressan, A. Kushova, G. Loli, M. Montardini, G. Sangalli, M. Tani. arXiv Preprint. arXiv:2403.07875 (2023).

Spline Upwind for space–time Isogeometric Analysis of cardiac electrophysiology

P. F. Antonietti, L. Dedè, G. Loli, G. Sangalli, P. Tesini. arXiv Preprint. arXiv:2311.17500 (2023).

Isogeometric multi-patch C^1 -mortar coupling for the biharmonic equation

A. Benvenuti, G. Loli, G. Sangalli, T. Takacs. arXiv Preprint. arXiv:2303.07255 (2023).

An unconditionally stable space–time isogeometric method for the acoustic wave equation

S. Frascini, G. Loli, A. Moiola, G. Sangalli. arXiv Preprint. arXiv:2303.07268 (2023).

In review

SCIENTIFIC PRESENTATIONS

- 23/02/2024 **Isogeometric Shape Optimization method for groundwater flow**
Invited talk at "Workshop Spoke 6 - Multiscale modelling & Engineering Applications - Centro Nazionale di Ricerca in HPC, Big Data and Quantum Computing", Sapienza Università di Roma, Rome, Italy.
- 25/01/2024 **Efficient PDEs solver with Isogeometric Analysis**
Invited talk at "Incontro Annuale dei Ricercatori in Matematica UNIPV", Università degli Studi di Pavia, Pavia, Italy.
- 23/08/2023 **An efficient solver for space–time isogeometric Galerkin methods for parabolic problems**
Invited talk at "10th International Congress on Industrial and Applied Mathematics – ICIAM 2023 Tokyo" in Tokyo, Japan.
- 29/09/2022 **Isogeometric multi-patch C^1 -mortar coupling for the bilaplace equation**
Invited talk at "GIMC SIMAI YOUNG 2022" in Pavia, Italy.
- 10/10/2020 **An efficient solver for space-time isogeometric Galerkin methods for parabolic problems**
Informal seminar at Institute of Mathematics (EDMA) of the École Polytechnique Fédérale de Lausanne (EPFL) in Lausanne, Switzerland.
- 20/01/2020 **Preconditioning of the isogeometric mass matrix**
Informal seminar at Institute of Mathematics (EDMA) of the École Polytechnique Fédérale de Lausanne (EPFL) in Lausanne, Switzerland.
- 20/09/2019 **Isogeometric Mass Matrix preconditioner**
Invited talk at "International Conference on Isogeometric Analysis (IGA 2019)" in Munich, Germany.
- 10/05/2019 **Space-time isogeometric preconditioners for parabolic problems**
Invited talk at "Third Young Numerical Analysts Meeting in Lombardy - TiciNUM 2019" in Pavia, Italy.

TEACHING EXPERIENCE

- 10.2023–01.2024 **Numerical Methods in Engineering Sciences, 6 ECTS** Università degli Studi di Pavia
Professor for Master Degree course in Civil Engineering, Computer Engineering and Industrial Automation Engineering.
- 03.2020–06.2020 **Numerical Analysis, 6 ECTS.** Università degli Studi di Pavia
Teaching assistant for Bachelor Degree course in Mathematics.
- 10.2019–01.2020 **Mathematical Analysis 1, 6 ECTS** Università degli Studi di Pavia
Teaching assistant for Bachelor Degree course in Industrial Engineering.
- 03.2019–06.2019 **Numerical Methods with Computer Laboratory, 6 ECTS** Università degli Studi di Pavia
Teaching assistant for Bachelor Degree course in Chemistry.
- 10.2018–01.2019 **Finite Element Method and Applications, 6 ECTS** Università degli Studi di Pavia
Teaching assistant for Master Degree course in Bioengineering.
- 10.2018–01.2019 **Linear Algebra and Geometry, 6 ECTS** Università degli Studi di Pavia
Tutor for Bachelor Degree course in Civil Engineering.

GRANTS

2024 **Principal investigator of the GNCS-INdAM Project 2024 (4700,00€)**
Sviluppo di metodi numerici innovativi ed efficienti per la risoluzione di PDE.

AWARDS

2021-2022 **Finanziamento Giovani Ricercatori GNCS 2021-2022**
Funding grant given by GNCS - Gruppo Nazionale per il Calcolo Scientifico (National Group for Scientific Computation) of INdAM - Istituto Nazionale di Alta Matematica (National Institute of High Mathematics) to young researchers.

2019 **HOFEIM - Best poster award**
Award for the best poster given at international workshop "The 8th International Workshop on High-Order Finite Element and Isogeometric Methods (HOFEIM-2019)".

ORGANIZATION OF WORKSHOPS OR CONFERENCES

18-22/09/2023 **Third Conference of Young Applied Mathematicians in Siena (YAMC-2023)** Organizer
Siena (SI), Italy

18-22/09/2022 **Second Conference of Young Applied Mathematicians in Arenzano (YAMC-2022)** Organizer
Arenzano (GE), Italy

28-31/05/2019 **The 8th International Workshop on High-Order Finite Element and Isogeometric Methods (HOFEIM-2019)** Local Organizer
Pavia (PV), Italy

COMPUTER SKILLS

Programming Languages

Python, Matlab, C.

Markup languages

LaTeX.

Operative systems

macOS, Unix, Windows.

Database management systems

SQL.

Revision-tracking systems

Git.

Other software packages

MS Office Suite.

LANGUAGES

English - Advanced, **French** - Basic, **Italian** - Native