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Born on October 9, 1993, in Piacenza, Italy.
Nationality: Italian.

Current position

University assistant and post-doctoral researcher, Chair of Numerics of PDEs, University of Vienna.

Areas of specialization

Numerical mathematics for partial differential equations, approximation theory, model order reduction, frequency-domain applications, scattering problems.

Appointments held

2014–2017	*Special courses teacher*, Piacenza (I).
2016	*Developer intern*, Iren SpA, Piacenza (I).
2017–2021	*Doctoral assistant*, EPFL, Lausanne (CH).
2022	*Post-doctoral researcher*, EPFL, Lausanne (CH).
2022–now	*University assistant and post-doctoral researcher*, University of Vienna, Vienna (A).

Education

2012–2015	BSc in Applied Mathematics (*cum laude*), Politecnico di Milano, Milan (I).

Thesis: "A mathematical justification of the momentum operator in quantum mechanics".

Advisor: Prof. M. Verri.

2015–2017	MSc in Computational Science and Engineering, EPFL, Lausanne (CH).

Project: "Implementation of smooth contact mechanics with the mortar method".

Advisor: Prof. G. Anciaux.

Project: "Finite elements-based Padé approximants for Helmholtz frequency response problems".
Advisor: Prof. F. Nobile.

Thesis: "Randomized low-rank approximation of matrices and tensors".

Advisor: Prof. D. Kressner.

2017–2021 PʜD in Mathematics, EPFL, Lausanne (CH).
Thesis: "Model order reduction based on functional rational approximants for parametric PDEs with meromorphic structure". Advisor: Prof. F. Nobile.

Grants, honors, and awards

2011 3rd place at the "Hong Kong International Science Fair".

2013 4th place in the "Championnat International des Jeux Mathématiques et Logiques".

2014 5th place in the "Championnat International des Jeux Mathématiques et Logiques".

2017 Douchet prize for best GPA, MATH-EPFL.

2020 Prize for exceptional teaching service, Section of Mathematics, EPFL.

2021 Junior Research Fellowship at ESI Vienna.

Publications and talks

Journal articles

2019 F. Bonizzoni and DP, "Distributed sampling for rational approximation of the acoustic scattering of an airfoil", PAMM 19.

2020 F. Bonizzoni, F. Nobile, I. Perugia, and DP, "Fast Least-Squares Padé approximation of problems with normal operators and meromorphic structure", Math. Comput. 89.

F. Bonizzoni, F. Nobile, I. Perugia, and DP, "Least-Squares Padé approximation of parametric and stochastic Helmholtz maps", Adv. Comput. Math. 46.

DP, "Interpolatory minimal rational model order reduction of parametric problems lacking uniform inf-sup stability", SIAM J. Numer. Anal. 58.

2021 F. Bonizzoni and DP, "Shape optimization for a noise reduction problem by non-intrusive parametric reduced modeling", Proc. WCCM-ECCOMAS2020.

DP and F. Nobile, "Frequency-domain non-intrusive greedy Model Order Reduction based on minimal rational approximation", Sci. Comput. Electr. Eng. 36.

F. Nobile and DP, "Non-intrusive double-greedy parametric model reduction by interpolation of frequency-domain rational surrogates", ESAIM:M2AN 55.

2022 DP and F. Nobile, "A technique for non-intrusive greedy piecewise-rational model reduction of frequency response problems over wide frequency bands", J. Math. Ind. 12.

Pending articles

2021 F. Bonizzoni, DP, and M. Ruggeri, "Rational-based model order reduction of Helmholtz frequency response problems with adaptive finite element snapshots", under review.

2022 DP, "Adaptive approximation of nonlinear eigenproblems by minimal rational interpolation", under review.

Presentations at conferences

2019 DP, F. Nobile, F. Bonizzoni, and I. Perugia, "A technique for rational model order reduction of parametric problems lacking uniform inf-sup stability", GAMM Annual Meeting 2019, Vienna (A).

DP, F. Nobile, F. Bonizzoni, and I. Perugia, "A technique for rational model order reduction of parametric problems lacking uniform inf-sup stability", ICIAM 2019, Valencia (E).

2021 ⌞ DP and F. Nobile, "Interpolatory rational model order reduction of parametric problems lacking uniform inf-sup stability", ENUMATH 2019, Egmond aan Zee (NL).

2021 ⌈ DP, F. Nobile, and F. Bonizzoni, "Non-intrusive model reduction of parametric frequency response problems via minimal rational interpolation", ICOSAHOM 2020/2021 (virtual), Vienna (A).

⌞ DP and F. Nobile, "Non-intrusive model reduction of parametric frequency-response problems – with applications to UQ", SIMAI 2020+2021, Parma (I).

2022 ⌈ DP and F. Nobile, "Non-intrusive surrogate modeling of parametric frequency response problems – With applications in forward UQ", SIAM UQ22 (virtual), Atlanta (Georgia, US).

DP and F. Nobile, "Inexpensive surrogate modeling of frequency response problems by greedy minimal rational interpolation", GAMM Annual Meeting 2022, Aachen (D).

⌞ DP and F. Nobile, "Non-intrusive surrogate modeling of frequency response surfaces via locally adaptive sparse grids", GIMC SIMAI Young 2022, Pavia (I).

Posters

2018 ⌈ F. Bonizzoni, I. Perugia, F. Nobile, and DP, "An efficient algorithm for Padé-type approximation of the frequency response for the Helmholtz problem", MoRePaS IV, Nantes (F).

⌞ F. Bonizzoni, I. Perugia, F. Nobile, and DP, "An efficient algorithm for Padé-type approximation of the frequency response for the Helmholtz problem", Swiss Numerics Day 2018, Zurich (CH).

2020 ⌈ DP and F. Nobile, "Frequency-domain non-intrusive greedy Model Order Reduction based on minimal rational approximation", SCEE 2020, Eindhoven (NL).

⌞ DP and F. Nobile, "Frequency-domain non-intrusive greedy Model Order Reduction based on minimal rational approximation", MORSS 2020 (virtual), Lausanne (CH).

2022 ⌈ DP and F. Nobile, "Non-intrusive adaptive surrogate modeling of parametric frequency-response problems", MORe 2022, Berlin (D).

Others

2018 ⌈ DP, F. Nobile, F. Bonizzoni, and I. Perugia, "Fast Least-Squares Padé approximation of self-adjoint problems with meromorphic structure", seminar, MATHICSE retreat, Sainte-Croix (CH).

⌞ DP, F. Nobile, F. Bonizzoni, and I. Perugia, "Fast Least-Squares Padé approximation of self-adjoint problems with meromorphic structure", workshop talk, DRWA, Alba di Canazei (I).

2019 ⌈ DP and F. Nobile, "Polynomial approximation of resonance manifolds", short seminar, MATHICSE retreat, Champéry (CH).

2020 ⌈ DP, "Padé approximation: a quick overview", seminar (virtual), CSQI talks, Lausanne (CH).

DP, "From Padé approximation to rational interpolation", seminar (virtual), CSQI talks, Lausanne (CH).

DP, "Minimal rational approximation", seminar (virtual), CSQI talks, Lausanne (CH).

⌞ DP, "Minimal rational approximation: a model reduction tool for parametrized PDEs with resonances", seminar (virtual), PDE Afternoons, Vienna (A).

2021 ⌈ DP, "Matching-based pMOR for dynamical systems", seminar (virtual), CSQI talks, Lausanne (CH).

| 2022 | DP, "Surrogate modeling of parametric frequency response problems via locally adaptive sparse grids", workshop talk, "Approx. of high-dim. param. PDEs in forward UQ" ESI workshop, Vienna (A). |
| | DP, "Can reliable surrogate models for frequency-domain problems be both non-intrusive and cheap to build?", workshop talk, "UQ in kinetic and transport equations and in high-frequency wave propagation" ESI workshop, Vienna (A). |

Teaching experience

2017	Analyse avancée I, Mathematics, EPFL.
2018	Analyse numerique, Mechanical Engineering, EPFL.
	Analyse fonctionnelle, Mathematics, EPFL.
2019	Introduction to partial differential equations, Mathematics, EPFL.
2021	Numerical analysis and computational mathematics, Computational Sciences, EPFL.
2019–2021	Parallel and high-performance computing, Computational Sciences, EPFL.

(Including preparation of course&exercise material, preparation and grading of assignments&exams.)

Other service

2019	Supervision of BSc thesis: "Approximation numérique du spectre des opérateurs elliptiques d'ordre deux" by T. Chanay, EPFL.
2020	Conference organizer, Model Order Reduction Summer School 2020 (virtual event).
	Referee for scientific journals: Advances in Computational Mathematics.
2022	Supervision of MSc project: "Minimal rational approximation for time-harmonic Maxwell's equations" by F. Matti, EPFL.

Computer skills

Advanced	Matlab, C/C++, OpenMP, MPI, Python, FreeFem++, LaTeX.
Intermediate	CUDA, C#, HTML.
	R, OpenFOAM, Fluent, Fortran, Java.

Languages

Italian:	Mothertongue	English:	Fluent
French:	Intermediate	Japanese:	Basic
German:	Basic	Spanish:	Basic