

# Martina Iannacito | Curriculum Vitae

Ph.D. in Applied Mathematics and Scientific Computing from the University of Bordeaux  
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## Research activities

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<b>Alma Mater Studiorum - University of Bologna</b> <i>Postdoctoral researcher at the Mathematics Department</i> Member of V. Simoncini's research group Keywords: matrix equation solver, tensor decomposition algorithms, randomization methods	<b>Italy</b> <i>April 2024 - present</i>
<b>Katholieke Universiteit Leuven</b> <i>Postdoctoral researcher at the Science, Engineering and Technology Faculty</i> May 2023 - March 2024 Member of L. De Lathauwer's research group Keywords: blind source separation, algebraic algorithms, canonical polyadic tensor decomposition	<b>Belgium</b> <i>May 2023 - March 2024</i>
<b>Inria Center at the University of Bordeaux</b> <i>Ph.D. student</i> Member of the Concace and HiePACS team Keywords: inexactness in iterative solvers, low-rank tensor approximations, data analysis	<b>France</b> <i>October 2019 - December 2022</i>
<b>University of Trento</b> <i>Master's student</i> Member of the Mathematics Department Keywords: tensor compression, hyperspectral images, remote sensing, biodiversity estimate	<b>Italy</b> <i>January 2019 - July 2019</i>

## Education

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<b>Inria Center at the University of Bordeaux</b> <i>Ph.D. in Applied Mathematics and Scientific Computing</i> Thesis supervised by O. Coulaud and L. Giraud Defence date December 9, 2022	<b>France</b> <i>October 2019 - December 2022</i>
<b>University of Trento</b> <i>Master's Degree in Applied Mathematics for Life and Data Science</i> Thesis supervised by A. Bernardi and D. Rocchini Defence date July 17, 2019, Summa Cum Laude	<b>Italy</b> <i>December 2017 - July 2019</i>
<b>University of Parma</b> <i>Bachelor's Degree in Mathematics</i> Thesis supervised by A. Bandini Defence date December 14, 2017, Summa Cum Laude	<b>Italy</b> <i>October 2014 - December 2017</i>
<b>Scientific High School G. Ascoli</b> <i>Maturity diploma</i> Defence date July 4, 2014, Summa Cum Laude	<b>Italy</b> <i>September 2009 - July 2014</i>

## Publications

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### Thesis

- [T2] M. Iannacito. (Dec 2022). "Numerical linear algebra and data analysis in large dimensions using tensor format". PhD thesis. Inria Center at the University of Bordeaux, France. URL: [theses.fr/s349733](https://theses.fr/s349733)
- [T1] M. Iannacito. (Jul 2019). "HOSVD for multispectral images. A numerical approach to the plant biodiversity estimate." Master's thesis. University of Trento, Italy. URL: [webapps.unitn.it/Biblioteca/it/Web/RichiestaConsultazioneTesi/365719](http://webapps.unitn.it/Biblioteca/it/Web/RichiestaConsultazioneTesi/365719)

### International journals

\*Authors alphabetically ordered

- [J8\*] Coulaud, O., L. Giraud, M. Iannacito, and M. Issa (2026). "Solving eigenvalue problems in high dimensions using contour integration and Tensor Train format". In: *SIAM Journal on Scientific Computing*. In press. URL: [inria.hal.science/hal-05017425v2](https://inria.hal.science/hal-05017425v2).
- [J7\*] Coulaud, O., L. Giraud, and M. Iannacito (2025). "On some orthogonalization schemes in Tensor Train format". In: *BIT Numerical Mathematics* 65.4, p. 45. DOI: [10.1007/s10543-025-01086-5](https://doi.org/10.1007/s10543-025-01086-5).
- [J6] Palitta, D., M. Iannacito, and V. Simoncini (2025). "A Subspace-Conjugate Gradient Method for Linear Matrix Equations". In: *SIAM Journal on Matrix Analysis and Applications* 46.4, pp. 2197–2225. DOI: [10.1137/25M1723402](https://doi.org/10.1137/25M1723402).
- [J5\*] Coulaud, O., L. Giraud, and M. Iannacito (Jan. 2025). "A note on TT-GMRES for the solution of parametric linear systems". In: *Electronic Transactions on Numerical Analysis* 62, pp. 163–187. DOI: [10.1553/etna\\_vol62s163](https://doi.org/10.1553/etna_vol62s163).
- [J4\*] Bernardi, A., M. Iannacito, and D. Rocchini (Dec. 2021). "High order singular value decomposition for plant diversity estimation". In: *Bollettino dell'Unione Matematica Italiana* 14.4, pp. 557–591. DOI: [10.1007/s40574-021-00300-w](https://doi.org/10.1007/s40574-021-00300-w).
- [J3] Thouverai, E., M. Marcantonio, G. Bacaro, D. Da Re, M. Iannacito, E. Marchetto, C. Ricotta, C. Tattoni, S. Vicario, and D. Rocchini (Apr. 2021). "Measuring diversity from space: a global view of the free and open source rasterdiv R package under a coding perspective". In: *Community Ecology* 22.1, pp. 1–11. DOI: [10.1007/s42974-021-00042-x](https://doi.org/10.1007/s42974-021-00042-x).
- [J2] Rocchini, D., E. Thouverai, M. Marcantonio, M. Iannacito, D. Da Re, M. Torresani, G. Bacaro, M. Bazzichetto, A. Bernardi, G. M. Foody, R. Furrer, D. Kleijn, S. Larsen, J. Lenoir, M. Malavasi, E. Marchetto, F. Messori, A. Monkeywordhi, V. Moudrý, B. Naimi, C. Ricotta, M. Rossini, F. Santi, M. J. Santos, M. E. Schaepman, F. D. Schneider, L. Schuh, S. Silvestri, P. Šimová, A. K. Skidmore, C. Tattoni, E. Tordoni, S. Vicario, P. Zannini, and M. Wegmann (Feb. 2021). "rasterdiv—An Information Theory tailored R package for measuring ecosystem heterogeneity from space: To the origin and back". In: *Methods in Ecology and Evolution* 12.6, pp. 1093–1102. DOI: [10.1111/2041-210X.13583](https://doi.org/10.1111/2041-210X.13583).
- [J1] Rocchini, D., M. Marcantonio, D. Da Re, G. Bacaro, E. Feoli, G. M. Foody, R. Furrer, R. J. Harrigan, D. Kleijn, M. Iannacito, J. Lenoir, M. Lin, M. Malavasi, E. Marchetto, R. S.

Meyer, V. Moudry, F. D. Schneider, P. Šimová, A. H. Thornhill, E. Thouverai, S. Vicario, R. K. Wayne, and C. Ricotta (Mar. 2021). "From zero to infinity: Minimum to maximum diversity of the planet by spatio-parametric Rao's quadratic entropy". In: *Global Ecology and Biogeography* 30.5, pp. 1153–1162. DOI: [10.1111/geb.13270](https://doi.org/10.1111/geb.13270).

## Preprints

\*Authors alphabetically ordered

- [RR2\*] Agullo, E., O. Coulaud, L. Giraud, M. Iannacito, G. Marait, and N. Schenkels (Sep. 2022). *The backward stable variants of GMRES in variable accuracy*. Tech. rep. RR-9483. Inria, p. 1-77. URL: <https://hal.science/hal-03776837>.
- [RR1\*] Coulaud, O., A. Franc, and M. Iannacito (Nov. 2021). *Extension of Correspondence Analysis to multiway data-sets through High Order SVD: a geometric framework*. Tech rep. RR-9429. Inria Bordeaux - Sud-Ouest; Inrae, p. 24. URL: <https://hal.science/hal-03418404>.

## Conferences and workshop talks

- [S9] Iannacito, M., D. Palitta, and V. Simoncini (Jan. 2026). "A Subspace-Conjugate Gradient method for linear matrix equations". In: *11th Workshop on Matrix Equations and Tensor Techniques*. Org. by P. Benner, H. Faßbender, L. Grasedyck, D. Kressner, B. Meini, V. Simoncini, L. De Lathauwer. Leuven, Belgium.
- [S9] Iannacito, M., D. Palitta, and S. Portaro (Oct. 2025). "A practical, fully parallel implementation of the (H-)Tucker decomposition via randomization". In: *Workshop on Approximate Computing in Numerical Linear Algebra*. Org. by A. Buttari, F. Jézéquel, and T. Mary. Paris, France.
- [S8] Iannacito, M., D. Palitta, and V. Simoncini (Sep. 2025). "A Subspace-Conjugate Gradient method for linear matrix equations". In: *Low-rank Structures and Numerical Methods in Matrix and Tensor Computations*. Org. by M. Benzi, B. Meini, V. Simoncini, F. Durastante, C. Pagliantini, and D. Palitta. Cortona, Italy.
- [S7] Iannacito, M., O. Coulaud, and L. Giraud (May 2024). "Orthogonalization schemes in tensor train format". In: *Approximate Computing Techniques for Orthogonalization Processes*. Org. by B. Vieublé and O. Balabanov. Paris, France: SIAM Conference on Applied Linear Algebra.
- [S6] Iannacito, M., L. De Lathauwer, and I. Domanov (Sep. 2023). "An algebraic algorithm for blind source separation and tensor decomposition". In: *Matrix Equations and Tensor Techniques X*. Org. by P. Benner, H. Faßbender, L. Grasedyck, D. Kressner, B. Meini, and V. Simoncini. Aachen, Germany.
- [S5] Iannacito, M., L. De Lathauwer, and I. Domanov (Aug. 2023). "An algebraic algorithm for blind source separation and tensor decomposition". In: *New Directions in Applied Linear Algebra*. Org. by J. Cockayne, J. Pearson, J. Pestana, D. Sylvester, and V. Simoncini. Banff, Canada: Banff International Research Station.
- [S4] Iannacito, M., O. Coulaud, and L. Giraud (Jul. 2023). "On Some Orthogonalization Schemes in Tensor Train Format". In: *Geometry in Optimization and Numerical (Multi)Linear*

*Algebra.* Org. by U. Konstantin and Y. Qi. Eindhoven / Hybrid, Netherlands: SIAM Conference on Applied Algebraic Geometry.

- [S3] Iannacito, M., O. Coulaud, and L. Giraud (Jun. 2023). "Orthogonalization schemes in Tensor Train format". In: *Approximate computing in numerical linear algebra*. Org. by N. Higham, X. Liu, and B. Vieublé. University of Strathclyde Glasgow. Glasgow, United Kingdom: 29th Biennial Conference on Numerical Analysis.
- [S2] Iannacito, M., O. Coulaud, and A. Franc (Sep. 2022). "Extension of Correspondence Analysis to multiway data-sets through HOSVD: a geometric framework". In: *Tensor Decompositions for Data Science*. Org. by R. Minster and N. Vannieuwenhoven. San Diego / Hybrid, United States: SIAM Conference on Mathematics of Data Science.
- [S1] Iannacito, M., E. Agullo, O. Coulaud, L. Giraud, G. Marait, and N. Schenkels (Sep. 2022). "GMRES in variable accuracy: a case study in low rank tensor linear systems". In: *GAMM - Workshop on Applied and Numerical Linear Algebra 2022*. Org. by E. Carson, I. Hnětynková, S. Pozza, P. Tichý, and M. Tůma. Prague, Czech Republic.

## Seminars

- [S9] Iannacito, M., D. Palitta, and V. Simoncini (Jan. 2026). "A Subspace-Conjugate Gradient Method for Linear Matrix Equations". In: Multilinear Models for Control and Diagnosis of Energy Systems team. Hamburg, Germany: HAW Hamburg.
- [S8] Iannacito, M. (Dec. 2024). "Tensor Train: description and applications". In: Course of Matrix and Tensor methods for Data Science. Bologna, Italy: Department of Mathematics, Alma Mater Studiorum - University of Bologna.
- [S7] Iannacito, M. (Apr. 2024). "Potential and applications of tensor-based algorithms". In: Scube. Bologna, Italy: Department of Mathematics, Alma Mater Studiorum - University of Bologna.
- [S6] Iannacito, M. (Dec. 2023). "Tensor-based algorithms: applications and challenges". In: Algorithmes Parallèles et Optimisation team. Toulouse, France: ENSEEIHT.
- [S5] Iannacito, M. (Nov. 2023). "Introduzione ai tensori: dalle applicazioni alle sfide contemporanee". In: Pisan Young Seminars in Applied and NUmerical Mathematics. Pisa, Italy: Department of Mathematics, University of Pisa.
- [S4] Iannacito, M. (Nov. 2023). "Discovering tensors: their challenges and applications". In: TensorDay 2023. Trento, Italy: Department of Mathematics, University of Trento.
- [S3] Iannacito, M., L. De Lathauwer, and I. Domanov (Oct. 2023). "From blind source separation to tensor decomposition: an algebraic algorithm". In: NUMA seminars. Leuven, Belgium: Department of Computer science, KU Leuven.
- [S2] Iannacito, M., O. Coulaud, and L. Giraud (Feb. 2022). "Solving linear systems in high dimension with TT-GMRES". In: Working group on tensors. Bordeaux, France: Inria Center at the University of Bordeaux.

- [S1] Iannacito, M., O. Coulaud, and A. Franc (May 2020). "Malabar dataset: data analysis in tensor format". In: Working group on tensors. Bordeaux, France: Inria center at the University of Bordeaux.

## Teaching activities

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<b>Alma Mater Studiorum - University of Bologna</b>	<b>Italy</b>
<i>Adjunct lecturer, 5 hours</i>	<i>November 2025</i>
Master's Degree in Mathematics	
Matrix and Tensor Techniques for Data Science	
<b>Alma Mater Studiorum - University of Bologna</b>	<b>Italy</b>
<i>Adjunct lecturer, 15 hours</i>	<i>February 2025 - May 2025</i>
Bachelor's Degree in Mathematics	
Computational Mathematics: Matrix methods for Data Science	
<b>Alma Mater Studiorum - University of Bologna</b>	<b>Italy</b>
<i>Tutor, 20 hours</i>	<i>December 2025 - June 2025</i>
Bachelor's Degree in Architecture	
Principles of Mathematics II	
<b>KU Leuven - Bruges</b>	<b>Belgium</b>
<i>Adjunct lecturer, 6 hours</i>	<i>January 2024 - March 2024</i>
Master's Degree of AI in Business and Industry	
Applied AI: Academic Perspectives, AI & Tensors	
<b>ENSEIRB-MatMeca</b>	<b>France</b>
<i>Adjunct lecturer, 47 hours</i>	<i>March 2021 - May 2022</i>
Engineering Degree in Computer Science	
Numerical Algorithms	
<b>University of Trento</b>	<b>Italy</b>
<i>Tutor, 50 hours</i>	<i>January 2019 - June 2019</i>
Master's Degree in Data Science	
Statistical Learning: Statistical Models	

## Related activities

<b>Una Europa Virtual Exchanges for Sustainability Erasmus+</b>	<b>University of Bologna</b>
<i>Moderator</i>	<i>October 2025 - December 2025</i>
<b>Final Education Project</b>	<b>ENSEIRB Bordeaux</b>
<i>External jury member</i>	<i>September 2022</i>

## Master's students supervision

<b>Kobe Sauwens</b>	<b>KU Leuven</b>
<i>Master's Degree in Mathematical Engineering</i>	<i>September 2023 - March 2024</i>
Thesis supervised by L. De Lathauwer and V. Rijmen	
"Exploration of Polyadic Tensor Decomposition as a tool for public key cryptography"	
<b>Andreas Devogel</b>	<b>KU Leuven</b>
<i>Master's Degree in Mathematical Engineering</i>	<i>September 2023 - March 2024</i>

Thesis supervised by L. De Lathauwer  
"Algebraic algorithms for tensor-based signal separation "

### Bachelor students supervision

**Margherita Todesco**  
*Bachelor's Degree in Mathematics*  
Thesis supervised by V. Simoncini  
"HOSVD: analysis and implementation"

**University of Bologna**  
December 2024 - July 2025

### Internship students supervision

**Léo Bertheas**  
*Electrical and Electronics Engineering Degree*  
2nd year stage supervised by O. Coulaud, L. Giraud, and J. R. Poirier  
"Solving the heat equation in Tensor Train format"

**ENSEEIHT Toulouse**  
June 2021 - August 2021

### Research visiting

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**Invited postdoctoral visiting**  
*Department of Biomedical Engineering, HAW Hamburg*  
Invited by G. Lichtenberg

**Hamburg**  
January 2026

### Scholarships, awards and qualifications

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**Invited speaker at 2-days workshop**  
*Sandpit Workshop "Tensor Decompositions 2.0"*  
Organized by K. Batselier and G. Lichtenberg  
Sponsored by Klaus-Tschira Stiftung

**Heidelberg**  
2025

**Invited speaker at 5-days workshop**  
*BIRS workshop "New Directions in Applied Linear Algebra"*  
Organized by J. Cockayne, J. Pearson, J. Pestana, D. Silvester, and V. Simoncini  
Hosted by Banff International Research Station

**Banff**  
2023

**Early Career Travel Award**  
*Society of Industrial and Applied Mathematics*

**Eindhoven**  
2023

**Qualification for Associate Professor positions**  
*Centre National des Universités*  
Section 26, Applied Mathematics

**France**  
2023

**Best Master's thesis of the Mathematics Department**  
*Mathematics Department at the University of Trento*

**Trento**  
2019

### Training activities

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**Integration of artificial intelligence tools into teaching**  
*Plenary courses*  
EDVANCE: Digital Education Hub Higher Education

**Bologna**  
2025

**3rd CINI HPC Summer school**  
*Plenary courses and hands-on sessions*

**Naples**  
2025

International Summer School on High-Performance Computing  
for Science, Industry, and Society

**Machine learning in Python with scikit-learn** Online  
2021  
*Practical aspects and regular exercises with Jupyter notebooks*  
MOOC, Inria Learning Lab, scikit-learn @ La Fondation Inria, Inria Academy, probabl

**High Performance Numerical Simulation** Inria Bordeaux  
2019  
*Plenary courses and hands-on sessions*  
Simulation of a harmonic wave propagation,  
from modelling to implementation in an HPC framework

## Software contributions

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<b>pyTensorlab</b> <i>Python package for tensor computations</i>	2025
<b>sscg</b> <i>Subspace-conjugate gradient method for linear matrix equations</i>	2025
<b>Rasterdiv</b> <i>Methods to calculate indices of diversity on numerical matrices based on information theory</i>	2020

## IT skills

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<b>Coding languages</b>	Python, MATLAB, R, C++
<b>OS</b>	Linux, Windows
<b>Collaborative tools</b>	GitHub, GitLab

## Languages

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<b>English</b>	Read, written, spoken	<i>Cambridge ESOL FCE (B2) in 2013</i>
<b>French</b>	Read, written, spoken	<i>Diplôme d'études en langue française (B1) in 2012</i>
<b>Italian</b>	Read, written, spoken	<i>Native</i>