

Curriculum vitae

Personal data

- **Born** January 1, 1983 in Treviglio (BG), Italy. Italian citizen.
- **Current work address** Dipartimento di Informatica; L.go Pontecorvo, 3; 56127 Pisa; Italy.
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Academic positions

- 2017–present **Professore associato**, *University of Pisa, department of Computer Science*, Pisa, Italy.
- 2012–2017 **Ricercatore universitario**, *University of Pisa, department of Computer Science*, Pisa, Italy. Research-oriented position at the assistant professor level. Permanent after a tenure-track period ended in 2014.
- 2011–2012 **A. von Humboldt Postdoctoral Fellow**, *Technische Universität Berlin, institute of Mathematics*, Berlin, Germany.
Info: http://en.wikipedia.org/wiki/Humboldt_Foundation.
- 2011 **Wissenschaftlicher Mitarbeiter**, *Technische Universität Berlin, institute of Mathematics*, Berlin, Germany.
Temporary research assistant position.

Education

- 2008–2010 **Perfezionamento (Ph.D.) in Mathematics**, *Scuola Normale Superiore*, Pisa, Italy.
Thesis *Algorithms for Quadratic Matrix and Vector Equations*.
Advisors D. A. Bini and B. Meini.
Legally equivalent to a European PhD and to the Italian title of *dottore di ricerca*.
- 2002–2008 **Diploma (corso ordinario)**, *Scuola Normale Superiore*, Pisa, Italy.
Five-year honours programme, complementing the bachelor/master studies at the University of Pisa. The Scuola Normale is a public higher learning institution on the model of the French *grandes écoles*.
Info: http://en.wikipedia.org/wiki/Scuola_normale.
- 2005–2007 **Laurea Specialistica (M.Sc.) in Mathematics**, *Università di Pisa*, Pisa, Italy.
- 2002–2005 **Laurea (B.Sc.) in Mathematics**, *Università di Pisa*, Pisa, Italy.

Research interests

Field: numerical linear algebra. Main topic: **matrix equations: numerical algorithms** for their solution and theoretical aspects. In particular, **algebraic Riccati equations** and other nonlinear equations related to generalized eigenvalue and invariant subspace problems.

After my studies in pure and computational mathematics, I have expanded my horizons by collaborating with several researchers from **applications** in which these equations appear (**control theory**, applied probability and **queuing theory**, **econometric time series**), getting familiar with the problems and the language of these fields.

Publications

Over 25 papers in peer-reviewed journals, including top journals in the field such as Mathematics of Computation, Numerische Mathematik, SIAM Journal on Matrix Analysis and Applications.

Scopus profile: <http://www.scopus.com/authid/detail.url?authorId=56071560300>.
Researcherid (Thomson Reuters): <http://www.researcherid.com/rid/G-9700-2012>
Google Scholar: <https://scholar.google.com/citations?user=Sc-AccMAAAAJ>.
One **research book** based on my PhD thesis: *Algorithms for Quadratic Matrix and Vector Equations* <http://www.springer.com/it/book/9788876423833>.

Other scientific activities

Conference organization

- 2017 **7th Workshop on Matrix Equations and Tensor Techniques (METT)**, *Pisa*, local organizing committee.
- 2016 **Mathematical Models and Computational Methods for Complex Networks**, *Pisa*, local organizing committee.
- 2015 **Minisymposium on Numerical Methods for Markov Chains and Stochastic Models**, *SIAM conference on applied Linear Algebra, Atlanta, USA*, invited minisymposium organizer.
- 2011 **Young Researchers Minisymposium on algebraic Riccati equations**, *17th ILAS Conference, Braunschweig, Germany*, minisymposium co-organizer with T. Reis.
- 2010 **16th ILAS Conference**, *Pisa, Italy*, local organizing committee.

Research visits

- 2017 **École Polytechnique Fédérale, Lausanne, Switzerland**, hosts: R. Luce, D. Kressner.
- 2017 **J. Strossmayer University of Osijek, Croatia**, host: N. Truhar.
- 2014 & 2015 **University of Adelaide, Australia**, hosts: G. Nguyen, N. Bean.
- 2014 **Federal University of Rio De Janeiro, Brazil**, host: I. Nisoli.
- 2013 **University of Manchester, UK**, host: V. Noferini.
- 2012 & 2013 **Rouen Business School, France**, host: G. Sbrana.
- 2010 & 2013 **Technische Universität Berlin, Germany**, host: V. Mehrmann.

Grants

- 2015 & 2017 **Progetto di Ricerca di Ateneo, Università di Pisa**.
Participant to two research projects funded by the university (1-year and 2-year respectively, ca. 15 people each).
- 2014, 2016, 2017 **Progetto di Ricerca, GNCS/INDAM**.
Participant to three 1-year research projects funded by an Italian funding agency, INDAM (ca. 8 people each).
- 2013 **Progetto di Ricerca, GNCS/INDAM**.
Principal investigator of a 1-year research project (8 people).
- 2012 & 2014 **Progetto Giovani Ricercatori, GNCS/INDAM**.
Recipient of a small single-person grant for young researchers, in two separate years.

Teaching activities

Video recordings of my lectures are available for several courses; links on <http://fph.altervista.org/dida/index.html>.

- 2013–2017 **Calcolo Numerico (esercitazioni)**, *Università di Pisa*, undergraduate course on numerical computing for biomedical engineering students, exercise classes supporting the course.
- 2016–2017 **Modelli Matematici Ambientali (laboratorio)**, *Università di Pisa*, graduate course on modelling with differential equations for environmental science students, lab classes supporting the course.

- 2016 **Numerical Methods and Optimization**, *Università di Pisa*, graduate course for Computer Science students, main instructor of the numerical linear algebra module. Taught in English.
- 2015 & 16 **Matematica Discreta e Algebra Lineare (lezioni)**, *Università di Pisa*, undergraduate course for computer science students, main instructor of the linear algebra module.
- 2014 **Laboratorio di Matematica Computazionale (lezioni)**, *Università di Pisa*, graduate lab course on applications of numerical mathematics and linear algebra, main instructor.
- 2008,09,10,12 **Laboratorio di Analisi Numerica (laboratorio)**, *Università di Pisa*, computer lab classes supporting an undergraduate numerical analysis course for maths students.
- 2008–10 **Complementi di Analisi (tutorato)**, *Scuola Normale Superiore, Pisa*, weekly tutoring activities and advanced exercises for a group of first-year Maths and Physics honours students of the Scuola Normale.

Awards

- 2011 **Shortlisted for the XIV Householder Award**.
Shortlist = qualified in the top 6. The Householder award is a prize for the best dissertation in numerical linear algebra in a 3-year period. Nominations are gathered worldwide.
- 2007 **2nd Matrix Prize for Young Speakers**, *International Conference in Matrix Methods and Operator Equations*, Moscow.
- 2003 **Championnat International de Jeux Mathématiques**, *1st place*, category L2 (undergrad). The CIJM is an international contest in elementary and recreational mathematical problems.
- 2002 **43rd International Mathematical Olympiad**, *Bronze Medal (17 points)*.
Highest score *ex aequo* among the 6-people Italian team. The IMO, held annually, is the most important international problem-solving contest in mathematics for pre-collegiate students.
- 2001 **42nd International Mathematical Olympiad**, *Honorable Mention (9 points)*.
- 2001–2002 **National scientific Olympiads** Italian Math Olympiad: 2nd place in 2002, 3rd place in 2001. Finalist in the Italian physics (2002) and informatics (2001) Olympiads.

Other relevant activities

- 2009–present **Member, Commissione Olimpiadi**, *Unione Matematica Italiana*.
Since 2003, I take part actively in the training activities, the organization, and the grading of the Italian Mathematical Olympiad, after several participations as a contestant (see *Awards*). Since 2009, I am a member of the organizing board. I was **deputy leader** of the Italian team in the 2014 International Mathematical Olympiad, and followed the Italian team to several other international competitions as a member of the scientific staff. I taught in over 25 local and national **training camps** for high-school students and teachers.
- 2010 **Referee, CISIA admission tests**, reviewer for the Mathematics part.
Unified entry test used for admission in the schools of engineering of many Italian universities.

Last update: 2018-01-19.

Full list of publications

Pdf files and a more up-to-date list are available on <http://fph.altervista.org/>.

The most common practice in mathematics is that the author order is alphabetical and does not reflect a difference in contribution.

List of conference talks (since 2011)

- 2011 Householder Symposium (Tahoe City, CA, USA), "Algorithms for nonnegative quadratic vector equations".
- 2011 XIX congresso dell'unione matematica italiana (Bologna), "Un nuovo algoritmo per un sistema di equazioni quadratiche nei branching processes".
- 2011 Matrix methods conference (Moscow), "Two numerical methods for the solution of Lur'e equations".
- 2011 Workshop on matrix and tensor equations (Aachen), "The benefits of changing identity - in Lagrangian subspaces and doubling algorithms".
- 2011 ILAS conference (Braunschweig), "There is no free mean".
- 2012 Structured Linear Algebra Problems (Leuven), "Robust control with doubling and permuted Lagrangian bases".
- 2012 When Probability Meets Computation (Varese), "Model estimation through matrix equations in financial econometrics".
- 2012 SIAM Conference on Applied Linear Algebra (Valencia), "A duality relation for matrix pencils with applications to linearizations".
- 2012 83rd GAMM conference (Darmstadt), "A projection method for the solution of large-scale Lur'e equations".
- 2013 Due Giorni di Algebra Lineare Numerica (Roma), "Modelling queues and buffers: Probabilistic interpretation and accurate algorithms".
- 2013 ILAS Meeting (Providence, RI, USA), "Duality of matrix pencils, singular pencils and linearizations".
- 2013 FUN13 (advances in matrix functions and matrix equations) (Manchester), "Perturbing Palindromic Matrix Equations to Make Them Solvable".
- 2013 Workshop on Matrix Equations and Tensor Techniques (Lausanne), "Modelling queues and buffers: Probabilistic interpretation and accurate algorithms".
- 2014 First Joint International Meeting RSME-SCM-SEMA-SIMAI-UMI (Bilbao), "Multivariate time series estimation via projections and matrix equations".
- 2014 4th IMA Conference on Numerical Linear Algebra and Optimisation (Birmingham), "Permuted graph bases for structured subspaces and pencils".
- 2014 Householder Symposium (Spa), "Triplet representations for matrix equations in queuing theory". Poster + poster blitz.
- 2014 Structured Numerical Linear and Multilinear Algebra (Kalamata), "Multivariate time series estimation via projections and matrix equation".
- 2014 Convegno GNCS 2014 (Montecatini Terme), "Algorithms for matrix functions and equations". Conclusive relation on a research project.
- 2015 Congresso UMI (Siena), "A new representation of Fiedler pencils".
- 2015 Numerical Algebra, Matrix Theory, Differential-Algebraic Equations, and Control Theory (Berlin), "Cyclic reduction and index reduction/shifting for a second-order probabilistic problem".
- 2015 SIAM LA15 Conference (Atlanta), "Using Inverse-free Arithmetic in Large-scale Matrix Equations".
- 2016 Congresso GNCS 2016 (Montecatini Terme), "Permuted bases for algebraic Riccati equations".
- 2016 MAM9 (Budapest), "Componentwise accurate numerical methods for Markov-modulated Brownian motion".

- 2016 ILAS (Leuven), "Interval arithmetic methods to verify the stabilizing solution of an algebraic Riccati equation".
- 2016 7th European Congress of Mathematics (Berlin), "Inverse-free and permuted bases methods for algebraic Riccati equations".
- 2017 88th GAMM conference (Weimar), "Counting Fiedler pencils using diagrams". Keynote lecture.
- 2017 Householder Symposium (Blacksburg, VA, USA), "Rigorous invariant measure computation with a two-grid strategy for matrix norms". Plenary.
- 2017 Workshop: Networks: from Matrix Functions to Quantum Physics (Oxford), "Quadratic Vector Equations and Multilinear Pagerank".
- 2017 INdAM Meeting Structured Matrices in Numerical Linear Algebra: Analysis, Algorithms and Applications (Cortona), "Counting Fiedler pencils using diagrams". Poster + poster blitz.
- 2017 Workshop on Matrix Equations and Tensor Techniques (Pisa), "Solving nonsingular systems of star-Sylvester equations".