

Giovanni Barbarino

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EXECUTIVE SUMMARY Ph.D. student in numerical analysis at SNS. Three article published and six preprints. Advanced knowledge of linear algebra, perturbation theory on matrices, asymptotic symbols for matrix sequences, and analysis of structured linear systems, acquired during work for master degree and research activity.

EDUCATION

- 2016 – Present **Ph.D. in Mathematics at Scuola Normale Superiore, Pisa.**
Thesis: *Spectral symbols for matrix sequences*,
Advisor Prof. Stefano Serra-Capizzano, co-Advisor prof. Michele Benzi.
- 2011 – 2016 **Master Degree at Scuola Normale Superiore, Pisa.**
4th year colloquium: Quasi-Birth and Death Stochastic Processes with an infinite number of phases: asymptotic decay properties,
Advisor Prof. Beatrice Meini.
- 2014 – 2016 **Master Degree in Mathematics at University of Pisa.**
Thesis: *Nonnegative Matrix Factorization: Theory with an application to translations invariant image processing*,
Advisor Prof. Luca Gemignani, Co-advisor Prof. Luca Romani
Final grade: 110/110 with honours.
- 2011 – 2014 **Bachelor Degree in Mathematics at University of Pisa.**
Expander Graphs: Spectral Properties and Applications,
Advisors Prof. Dario Andrea Bini
Final grade: 110/110 with honours.

PUBLICATIONS

- Feb 2019 *Spectral Measure*, Proceedings of Cortona Meeting, Springer INdAM Series.
- Jul 2018 *Notes on asymptotic eigenvalues distribution on complex circles*, preprint.
- Aug 2018 *Conjectures on Perturbations of Hermitian Sequences*, preprint.
- Jun 2018 *Normal Form for GLT Sequences*, preprint.
- Feb 2018 *Non-Hermitian perturbations of Hermitian matrix-sequences and applications to the spectral analysis of approximated PDEs*, j/w Stefano Serra-Capizzano, Technical report / Department of Information Technology, Uppsala University.
- Dec 2017 *From convergence in measure to convergence of matrix-sequences through concave functions and singular values*, j/w Carlo Garoni, Electronic Journal of Linear Algebra.
- Oct 2017 *Diagonal Matrix Sequences and their Spectral Symbols*, preprint.
- Sep 2017 *Equivalence between GLT sequences and measurable functions*, Linear Algebra and its Applications.
- Dic 2016 *Grafi Expanders: Proprietà Spettrali e Applicazioni*, Edizioni Accademiche Italiane.
- Aug 2016 *Permutation NMF*, preprint.

TALKS

- Nov 2018 *Higher order spectral symbols and eigenvalues approximation for Toeplitz matrices* at University of Pisa.
- Feb 2018 *Perturbations of Hermitian Matrices and Applications to Spectral Symbols* at Two days of Linear Algebra and Applications (Padua).
- Oct 2017 *Generalized Locally Toeplitz Sequences: a Link between Measurable Functions and Spectral Symbols* and *Ordering the Eigenvalues: GLT Symbols and Spectral Measures* at Como, University of Insubria.
- Jul 2017 *Equivalence between GLT sequences and measurable functions* at CIME-EMS Summer School on Splines and PDEs (Cetraro).
- Aug 2016 *Permutation NMF* at Rome-Moscow Summer School.

CONFERENCES

- Feb 2018 GNCS Indam Assembly (Montecatini).
- Feb 2018 Two days of Linear Algebra and Applications (Padua).
- Sep 2017 INdAM Meeting Structured Matrices in Numerical Linear Algebra: Analysis, Algorithms and Applications (Cortona).
- Jul 2017 CIME-EMS Summer School on Splines and PDEs (Cetraro).
- Feb 2017 Two days of Linear Algebra (Como).
- Aug 2016 Rome-Moscow Summer School.
- Jul 2011 *International Mathematical Summer School* for talented students in their last two years of high school. The program featured plenary talks and mini-courses by leading international mathematicians at Jacobs University.

TEACHING

- 2017 – Present Teacher at Stages of preparation for Mathematics Olympiad for UMI. I have taught kids from 13 to 19 years old and high school teachers.
- 2016 – 2017 Tutor, Scuola Normale Superiore, Pisa. I have tutored students in their first year of university.

WORK EXPERIENCES

- 2011 – present Organizer of National Mathematics Olympiad for UMI.
Preparation and evaluation of tests at several levels (local and national).

PERSONAL SKILLS

- Languages Italian: mother tongue.
English: advanced (C1).
- Computer skills - software development (Python, C/C++, OCaml, Qtcreator, Javascript);
- website development (HTML, CSS, Wordpress);
- mathematical software (Mathematica, MATLAB, Octave, Singular, CoCoA, Fortran);
- document preparation, especially for scientific works (LaTeX, Word, Excel).

PERSONAL INTERESTS

- 2015 – present I'm interested in developing software for artificial intelligence.
- Sports I am a swimmer and an amateur chess player.
- Awards – Italian Mathematical Olympiad, Gold medal (2009 and 2011), Silver medal (2008 and 2010).
– Kangaroo (mathematical italian competition), First place (2009).
– Mathematical Games of Bocconi (mathematical italian competition), First place(2010), Third place(2009).