

# Roberto Pagaria

roberto.pagaria@gmail.com; +39 334 73 60 041; 10 October 1992, Italy

**EXECUTIVE SUMMARY** I am a researcher in algebraic topology at Bologna University. Seven articles published in leading math journals. Advanced knowledge of abelian arrangements, configuration spaces, matroids, representation theory, spectral sequences and quiver variety, acquired during the-  
sis works and research activities.

## EDUCATION

---

- Jul 2020 – 2024 **Research associate at Bologna University (RTDA)**
- 2019 – 2020 **Research fellow at Bologna University.**
- 2016 – 2019 **Ph.D. in Mathematics at Scuola Normale Superiore, Pisa.**  
Thesis: *Cohomology and Combinatorics of Toric Arrangements*, Advisor Prof. Filippo Callegaro. Final grade: 70/70 cum laude.
- 2011 – 2016 **Master's Degree at Scuola Normale Superiore, Pisa.**  
 $4^{th}$  year colloquium: *Decomposition formula for tensor product of representations of Lie algebras*, Advisor Prof. Andrea Maffei.
- 2014 – 2016 **Master's Degree in Mathematics at University of Pisa.**  
Thesis: *The geometry of quiver varieties*, Advisor Prof. Andrea Maffei. Final grade: 110/110 cum laude.
- 2011 – 2014 **Bachelor's Degree in Mathematics at University of Pisa.**  
Thesis: *The Brauer group of local fields*, Advisors Prof. Angelo Vistoli and Prof. Ilaria Del Corso. Final grade: 110/110 cum laude.

## PUBLICATIONS

---

- May 2020 *Asymptotic growth of Betti numbers of ordered configuration spaces on an elliptic curve* arXiv:2005.02106
- Jun 2020 *Orientable arithmetic matroids* in Discrete Math. 343 (2020), no. 6, 111872.
- Jun 2020 *Poincaré polynomial of elliptic arrangements is not a specialization of the Tutte polynomial* in Discrete Math. 343 (2020), no. 6, 111710.
- Jan 2020 *On the cohomology of arrangements of subtori* j/w L. Moci arXiv:2001.05180.
- Nov 2019 *Orlik-Solomon-type presentations for the cohomology algebra of toric arrangements* j/w F. Callegaro, M. D'Adderio, E. Delucchi, L. Migliorini in Trans. Amer. Math. Soc. 373 (2020), no. 3, 1909–1940.
- Nov 2019 *The homotopy type of elliptic arrangements* j/w E. Delucchi arXiv:1911.02905 to appear in Algebr. Geom. Topol.
- Oct 2019 *Two examples of toric arrangements* in J. Combin. Theory Ser. A 167 (2019), 389–402.
- Aug 2019 *Representations of torsion-free arithmetic matroids* j/w G. Paolini arXiv:1908.04137.
- Jun 2019 *Combinatorics of toric arrangements* in Atti Accad. Naz. Lincei Rend. Lincei Mat. Appl. 30 (2019), no. 2, 317–349.
- May 2019 *Cohomology of configuration spaces of surfaces* arXiv:1905.04724.
- Jan 2019 *The cohomology ring of unordered configuration spaces of the torus* to appear in Algebr. Geom. Topol.

May 2018 *The connection between combinatorics and cohomology of elliptic arrangements*  
arXiv:1805.04906.

## INVITED TALKS

- May 2019 *Wonderful models for toric arrangements* at Arrangements at Home: Combinatorial Aspects (Western University)
- Nov 2019 *Configuration spaces of surfaces* at Università degli studi di Padova.
- Sep 2019 *Orlik-Solomon type presentations for the cohomology algebra of toric arrangements* at Heilbronn Institute (Bristol).
- Jul 2019 *Arithmetic matroids, posets and cohomology of toric arrangements* at Bern – SIAM.
- May 2019 *Unordered configuration spaces of surfaces* at Western University (London).
- Apr 2019 *Arithmetic matroids and their Representations* at KTH (Stockholm).
- Mar 2019 *Toric Arrangements* at Bologna University.
- Mar 2019 *Configuration spaces of points on surfaces* at Pisa University.
- Nov 2018 *Cohomology ring of configuration of points in  $\mathbb{T}^2$*  at University of Neuchâtel
- Sep 2018 *Counting regions* at summer school Pisa-Hokkaido-Roma2.
- Jun 2018 *Combinatorics and cohomology algebra of toric arrangements* at RIMS, Kyoto University.
- Feb 2018 *Orlik-Solomon relations for toric arrangements* at the winter school Geometry, Algebra and Combinatorics of Moduli Spaces and Configurations II (Dobbiaco/Toblach).
- May 2017 *Toric arrangements* at the conference Combinatorics of Root Systems (Cortona).

## GRANTS

- 2020 Participant to PRIN 2017 “Moduli and Lie Theory”, nr. 2017YRA3LK002
- 2019 SIAM Student Travel Awards
- 2011 INdAM university scholarship

## SHORT TERM VISITS

- Nov 2018 Research visit at university of Fribourg (Switzerland) working with Professor Emanuele Delucchi.
- May 2019 “Arrangements at Western” intensive research period at University of Western Ontario.

## SOFTWARE DEVELOPER

- Jul 2019 I developed the Sage package arithmat together with G. Paolini.
- Computer skills
- software development (Python, C/C++, Turbo Pascal, OCaml);
  - mathematical software (Sage, Singular, M2, Mathematica, MATLAB, Octave, CoCoA);
  - document preparation, especially for scientific works (LaTeX, Word, Excel).

## TEACHING

- 2019 – 2020 Teaching Assistant for “Algebraic Topology” course, University of Pisa, 20h.
- 2018 – 2019 Teaching Assistant for “Algebraic Topology” course, University of Pisa 20h.
- 2017 – 2018 Teaching Assistant for “Algebra 1” course, University of Pisa, 14h.
- 2016 – 2017 Teaching Assistant for “Institution of Algebra” course, University of Pisa, 30h.
- 2015 – 2016 Tutor, University of Pisa. I have tutored students in their first two years, 150h.
- 2014 – 2015 Teaching Assistant for “Mathematical analysis” course at Physics Faculty, University of Pisa, 60h.

## STUDENTS

Co-supervisor of Claudia Agosti’s Master’s Thesis, “Coomologia di arrangiamenti di iperpiani e torici” degree obtained in December 2019.

Co-supervisor of Francesco Tosello's Bachelor's Thesis, "On the Braid Group" degree expected in summer 2020.

## PERSONAL SKILLS

---

- Languages Italian: mother tongue. English: advanced (C1).
- Communication skills I have attended the course "Corso di Formazione Tutorato alla Pari" on active listening aimed at helping people in difficulty (University of Pisa 2015/2016), "Corso di inglese scientifico" and "Corso su curriculum vitae e colloqui di lavoro in inglese" (Scuola Normale Superiore di Pisa 2019).

## PERSONAL INTERESTS

---

- 2012 – present I am a passionate player of Go. I competed in the international tournament "European Go Congress" twice.
- Sports I am a football player, a skier, and an amateur chess player. I have practised sport climbing and sailing.
- Awards – Italian Mathematical Olympiad, Gold medallist (2010 and 2011).  
– Kangaroo (mathematical Italian competition), First place (2011).
- 2011 – 2015 Organizer of National Mathematics Olympiad for UMI. Preparation and evaluation of tests at (local and national) Italian Mathematical Olympiad.