

Alessio Borzì

Curriculum vitae

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Employment

- 10/07/2023– **Postdoctoral researcher**, Max-Planck-Institut für Mathematik in den Naturwissenschaften, Leipzig, Germany

Education

- 30/09/2019– **PhD in Mathematics**, University of Warwick, Coventry, United Kingdom
30/06/2023 Advisor: [Diane MacLagan](#)
- 18/12/2020 **Diploma of Scuola Superiore di Catania**, Scuola Superiore di Catania, Catania, Italy, *Summa cum laude*
Advisor: [Ivan Martino](#), Opponent: [Alicia Dickenstein](#)
- 29/07/2019 **Master's degree in Mathematics**, Università di Catania, Catania, Italy, *Summa cum laude*
Advisor: [Marco D'Anna](#)
- 20/07/2017 **Bachelor's degree in Mathematics**, Università di Catania, Catania, Italy, *Summa cum laude*
Advisor: [Marco D'Anna](#)

Publications and Preprints

1. Alessio Borzì. A characterization of the Arf property for quadratic quotients of the Rees algebra. *J. Algebra Appl.*, 19(7):2050127, 14, 2020.
2. Alessio Borzì. Patterns on the numerical duplication by their admissibility degree. In *Numerical semigroups*, volume 40 of *Springer INdAM Ser.*, pages 9–25. Springer, Cham, 2020.
3. Alessio Borzì. Weierstrass sets on finite graphs. *Electron. J. Combin.*, 29(1):Paper No. 1.4, 13, 2022.
4. Alessio Borzì. Realizability of matroid quotients. *arXiv preprint arXiv:2403.03615*, 2024.
5. Alessio Borzì. Tropical computations for toric intersection theory in Macaulay2. *J. Softw. Algebra Geom.*, 14(1):19–29, 2024.
6. Alessio Borzì, Xiangying Chen, Harshit J. Motwani, Lorenzo Venturello, and Martin Vodička. The leading coefficient of Lascoux polynomials. *Discrete Math.*, 346(2):Paper No. 113217, 2023.

7. Alessio Borzì and Alessio D'Alì. Graded algebras with cyclotomic Hilbert series. *J. Pure Appl. Algebra*, 225(12):Paper No. 106764, 9, 2021.
8. Alessio Borzì, Andrés Herrera-Poyatos, and Pieter Moree. Cyclotomic numerical semigroup polynomials with at most two irreducible factors. *Semigroup Forum*, 103(3):812–828, 2021.
9. Alessio Borzì and Ivan Martino. Set of independencies and Tutte polynomial of matroids over a domain. *arXiv preprint arXiv:1909.00332*, 2019.
10. Alessio Borzì and Victoria Schleis. Linear degenerate tropical flag varieties. *arXiv preprint arXiv:2308.04193*, 2023.

Awards

- 21/12/2022 [Angelo Marcello Anile Award](#), *Best master thesis in mathematics and computer science at the University of Catania*
- 09/2014 [Scuola Superiore di Catania scholarship](#), *Awarded to the top 10 candidate students in a scientific field at the University of Catania*

Selected Talks

- 10/04/2025 [Realizability of matroid quotients](#), *University of Catania*, Italy
- 11/04/2024 [Realizability of matroid quotients](#), *MPI MiS Leipzig*, Germany
- 07/03/2024 [Realizability of matroid quotients](#), *(virtually at) Universiteti i Prishtinës*, Kosovo
- 25/10/2023 [Cyclotomic Numerical Semigroups and Graded Algebras](#), *(virtually at) University of York*, UK
- 19/04/2023 [Tropical Weierstrass Semigroups](#), *University of Catania*, Italy
- 17/06/2022 [Cyclotomic Numerical Semigroups and Graded Algebras](#), *International Meeting on Numerical Semigroups (IMNS)*, Roma, Italy
- 17/03/2022 [Weierstrass sets on finite graphs](#), *Online Algebraic Geometry Seminar*, *(virtually at) Nottingham University*, UK
- 18/11/2021 Birational geometry of blow-ups of \mathbb{P}^2 , *Oberseminar Geometrie*, Universität Tübingen, Germany
- 01/11/2021 [Tropical moduli spaces and toric embeddings](#), $\overline{M}_{0,n}$ seminar, *(virtually at) University of Warwick*, United Kingdom
- 22/04/2021 [Graded algebras with cyclotomic Hilbert series](#), *Graduate student meeting on Applied Algebra and Combinatorics*, *(virtually at) Københavns Universitet*, Denmark
- 04/02/2021 Tropical methods in toric intersection theory, *Oberseminar Geometrie*, *(virtually at) Universität Tübingen*, Germany
- 20/11/2019 [Cyclotomic Numerical Semigroups](#), *Postgraduate Seminar*, University of Warwick, United Kingdom

- 17/07/2019 [Face poset and Grothendieck-Tutte polynomial of matroids over a domain, Algebra meets combinatorics in Neuchâtel](#), Université de Neuchâtel, Switzerland
- 25/03/2019 Arf property on quadratic quotients of the Rees algebra, *Problem solving seminar*, Stockholm University, Sweden
- 04/09/2018 [A characterization of the Arf property for quadratic quotients of the Rees algebra](#), *International Meeting on Numerical Semigroups (IMNS)*, Cortona, Italy

Conferences

- 26-27/09/2024 [Discrete Mathematics and Biology: the legacy of Andreas Dress](#), MPI MiS Leipzig, Germany
- 29/07-02/08/2024 [MEGA 2024](#), MPI MiS Leipzig, Germany
- 15-19/07/2024 [Summer School in Algebraic Combinatorics](#), MPI MiS Leipzig, Germany
- 13-17/05/2024 [Combinatorial Algebraic Geometry from Physics](#), MPI MiS Leipzig, Germany
- 3-4/05/2024 [AIToGeLiS 2024](#), Max Planck Institute of Molecular Cell Biology and Genetics, Dresden, Germany
- 12-16/02/2024 [Positive Geometry in Particle Physics and Cosmology](#), MPI MiS Leipzig, Germany
- 13-15/11/2023 [Workshop on Geometry and Machine Learning](#), MPI MiS Leipzig, Germany
- 08-10/11/2023 [IMPRS Combo 1](#), MPI MiS Leipzig, Germany
- 16-18/10/2023 [Chow Lectures](#), MPI MiS Leipzig, Germany
- 03-07/07/2023 [GAeL XXX](#), University of Warwick, UK
- 12-16/06/2023 [PRAGMATIC 2023](#), University of Catania, Italy
- 27/06-01/07/2022 [Arrangements in Ticino](#), Locarno and Lugano, Switzerland
- 13-17/06/2022 [International meeting on numerical semigroups \(IMNS\) 2022](#), Rome, Italy
- 30/05-01/06/2022 [Göran Gustafsson lectures in mathematics 2022](#), Institute Mittag-Leffler, Sweden
- 23-27/05/2022 [Géométrie Algébrique en Liberté XXIX \(GAeL\)](#), Université Paris-Saclay, France
- 04-05/05/2022 [Tropical Mathematics & its Applications](#), Durham University, UK
- 28/02-04/03/2022 [OSCAR developer meeting - Tropical Geometry](#), TU Kaiserslautern, Germany
- 03/12/2021 [Applied Algebra and Geometry Research Network](#), Online Conference
- 24-30/10/2021 [Tropical Curves, Logarithmic Structures, and Enumerative Geometry](#), Oberwolfach, Germany
- 26/07-06/08/2021 [Combinatorial Algebraic Geometry](#), Online conference
- 28/06-02/07/2021 [Tropical Moduli Spaces](#), Online conference

21–23/04/2021	Graduate student meeting on Applied Algebra and Combinatorics , Online conference
19/03/2021	Birational Geometry and Thereabouts , Online conference
15/02–05/03/2021	Research Encounters in Algebraic and Combinatorial Topics (REACT) , Online conference
08/06–24/07/2020	Algebraic and Tropical Online Meetings (ATOM) , Online conference
01–05/06/2020	Warwick Macaulay 2 Workshop , University of Warwick, United Kingdom Online conference
06/12/2019	Tropical Differential Algebra Workshop , Queen Mary University of London, United Kingdom
02–04/12/2019	Einstein Workshop on Polytopes and Algebraic Geometry , Freie Universität Berlin, Germany
15–17/07/2019	Algebra meets combinatorics in Neuchâtel , Université de Neuchâtel, Switzerland
03–07/09/2018	International Meeting on Numerical Semigroups (IMNS) , Cortona, Italy
31/05–04/06/2021	Encounter in Topology and Algebra (ET'nA) , Scuola Superiore di Catania, Italy

Teaching and Mentoring

Winter 2022	Teaching assistant , for the course MA453 Lie Algebras Taught by Andrew Macpherson, <i>University of Warwick</i>
Fall 2021	Teaching assistant , for the course MA131 Analysis I Taught by Daniel Ueltschi, <i>University of Warwick</i>
Winter 2021	Teaching assistant , for the course MA377 Rings and Modules Taught by Samir Siksek, <i>University of Warwick</i>
Fall 2020	Teaching assistant , for the course MA4L7 Algebraic Curves Taught by Diane Maclagan, <i>University of Warwick</i>
02–20/10/2023	Mentor , for the student Tobias Schnieders for his Bachelor Thesis, written under the supervision of Hannah Markwig.

Research visits

28/03–12/04/2025	Research visit at the University of Catania (Italy) in the algebra and geometry group, in collaboration with Elena Guardo .
29/10–28/11/2021	Research period at the Universität Tübingen (Germany) in the combinatorial algebraic geometry group, under the supervision of Hannah Markwig .
07/03–05/06/2019	Research period at the KTH Royal Institute of Technology (Sweden) in the combinatorics group, under the supervision of Ivan Martino .

Seminars and conferences organization

03–07/07/2023	I was a local organizer of the 30th edition of GAeL .
18/09/2020–27/05/2021	I organized an online reading group on tropical geometry .

Other professional activities

Member of the [Associazione Alumni Scuola Superiore di Catania](#).

Member of the [London Mathematical Society](#) (LMS).

Member of the [GNSAGA](#).

Referee for: European Journal of Combinatorics, Journal of Commutative Algebra, Australasian Journal of Combinatorics.

Outreach

02-03/10/2021 Speaker at the [Simposio Matematico RIMSE 2021](#).

19–22/04/2018 **Organizer** for the [Training Course for Mathematical Olympiad](#) (fourth edition) at the Scuola Superiore di Catania.

20–23/04/2017 **Organizer** for the [Training Course for Mathematical Olympiad](#) (third edition) at the Scuola Superiore di Catania.

22–24/04/2016 **Lecturer** for the [Training Course for Mathematical Olympiad](#) (second edition) at the Scuola Superiore di Catania.