

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](#), On-line 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, *University of Warwick*
- Fall 2021 **Teaching assistant**, for the course [MA131 Analysis I](#)
Taught by Daniel Ueltschi, *University of Warwick*
- Winter 2021 **Teaching assistant**, for the course [MA377 Rings and Modules](#)
Taught by Samir Siksek, *University of Warwick*
- Fall 2020 **Teaching assistant**, for the course [MA4L7 Algebraic Curves](#)
Taught by Diane Maclagan, *University of Warwick*
- 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.