

Marie-Charlotte Brandenburg

Curriculum Vitæ

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Education and Professional Experience

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|--------------|---|
| 2020 – today | Max Planck Institute for Mathematics in the Sciences
Ph.D. Student
Research Group: Non-Linear Algebra
Advisor: Rainer Sinn |
| 2019 – 2020 | Berlin Mathematical School Freie Universität Berlin
Ph.D. Student
Research Groups: Discrete Geometry, Discrete Methods in Algebraic Geometry
Advisor: Rainer Sinn |
| 2019 | Freie Universität Berlin
M.Sc. Mathematics
Master Thesis: <i>Competitive Equilibrium and Lattice Polytopes</i>
Advisor: Christian Haase |
| 2017 – 2019 | Freie Universität Berlin
Student Assistant
Research Group: Discrete Geometry |
| 2016 – 2017 | Minodes GmbH
Data Analyst
Business Intelligence |
| 2016 | Freie Universität Berlin
B.Sc. Mathematics
Bachelor Thesis: <i>A 4-Simple 4-Simplicial 8-Polytope</i>
Advisor: Günter M. Ziegler |

Publications and Preprints

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|------|---|
| 2022 | Multivariate Volume, Ehrhart and h^*-Polynomials of Polytopes
with Sophia Elia and Leon Zhang
<i>Journal of Symbolic Computation</i> , April 2022
doi:10.1016/j.jsc.2022.04.011 |
| 2022 | Intersection Bodies of Polytopes
with Katalin Berlow, Chiara Meroni and Isabelle Shankar
<i>Beiträge zur Algebra und Geometrie / Contributions to Algebra and Geometry</i> , January 2022
doi:10.1007/s13366-022-00621-7 |

- 2021 **Investigation of hydro-mechanical processes in fluid-saturated fractured rock based on numerical model generation**
with Nele Pollmann, Julia Gallas, Lucas Witte and Tobias Backers
IOP Conference Series: Earth and Environmental Science, 833(1):012107, August 2021
[doi:10.1088/1755-1315/833/1/012107](https://doi.org/10.1088/1755-1315/833/1/012107)
- 2021 **Competitive equilibrium always exists for combinatorial auctions with graphical pricing schemes**
with Christian Haase and Ngoc Mai Tran
[arXiv:2107.08813](https://arxiv.org/abs/2107.08813)

Research Talks

- March 2022 **Intersection Bodies of Polytopes**
Combinatorial Coworkspace
Goethe-Universität Frankfurt
- March 2022 **Competitive Equilibrium and Lattice Polytopes**
Research Seminar Discrete Mathematics and Geometry
Technische Universität Berlin
- March 2022 **The Positive Tropicalization of Low Rank Matrices**
Discrete and Convex Day
Freie Universität Berlin
- March 2022 **Competitive Equilibrium and Lattice Polytopes**
Mini-Symposium on Lattice Polytopes
KTH Royal Institute of Technology in Stockholm and University of Nottingham
- February 2022 **Intersection Bodies of Polytopes**
Colloquium of the Graduate School “Facets of Complexity”
Freie Universität Berlin
- December 2021 **Intersection Bodies of Polytopes**
Conference for Women in Algebra and Symbolic Computation II
Technische Universität Kaiserslautern
- November 2021 **Intersection Bodies of Polytopes**
Research Seminar Nonlinear Algebra
Max Planck Institute for Mathematics in the Sciences, Leipzig
- May 2021 **The Positive Tropicalization of Low Rank Matrices**
Research Seminar Nonlinear Algebra
Max Planck Institute for Mathematics in the Sciences, Leipzig
- July 2020 **Multivariate Volume, Ehrhart and h^* -Polynomials of Polytopes**
Research Seminar Discrete Geometry
Freie Universität Berlin
- October 2019 **Competitive Equilibrium and Lattice Polytopes**
Research Seminar Algebra and Geometry
Otto-von-Guericke-Universität Magdeburg
- December 2018 **Product-Mix Auctions, Competitive Equilibrium and Lattice Polytopes**
Colloquium of the Graduate School “Facets of Complexity”
Freie Universität Berlin

Posters

December 2019 **Multivariate Volume, Ehrhart and h^* -Polynomials of Polytopes**
 Conference for Women in Algebra and Symbolic Computation I
Technische Universität Kaiserslautern

Teaching

2020 **Linear Algebra II**
 Teaching Assistant
 for a class for first-year math students
Freie Universität Berlin

2019 **Panorama der Mathematik**
 Teaching Assistant
 for a class for first-year math teachers in training
Freie Universität Berlin

2018 **Geometry**
 Teaching Assistant
 for a class for advanced bachelor and early master students
Freie Universität Berlin

Organization

2022 **AlToGeLiS**
 Consortium for revealing structures of data with algebra, topology, and geometry

2019 **MATH+ Algebraic Geometry Research Retreat**
 Workshop within the MATH+ Thematic Einstein Semester on Algebraic Geometry

Extended Stays

June 2019 –
 September 2019 **Max Planck Institute for Mathematics in the Sciences**
 Leipzig, Germany
 Research Group: Nonlinear Algebra

January 2019 –
 February 2019 **Simons Institute for the Theory of Computing**
 Berkeley, CA, USA
 Program: Geometry of Polynomials