

Marie-Charlotte Brandenburg

Curriculum Vitæ

Current as of November 23, 2021

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Education and Professional Experience

- 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: *Competitive Equilibrium and Lattice Polytopes*
Advisor: Christian Haase
- 2017 **Freie Universität Berlin**
B.Sc. Mathematics
Bachelor Thesis: *A 4-Simple 4-Simplicial 8-Polytope*
Advisor: Günter M. Ziegler
- 2016 – 2017 **Minodes GmbH**
Data Analyst
Business Intelligence

Publications and Preprints

- 2021 **Intersection Bodies of Polytopes**
joint work with Katalin Berlow, Chiara Meroni and Isabelle Shankar
[arXiv:2110.05996](https://arxiv.org/abs/2110.05996)
- 2021 **Competitive equilibrium always exists for combinatorial auctions with graphical pricing schemes**
joint work with Christian Haase and Ngoc Mai Tran
[arXiv:2107.08813](https://arxiv.org/abs/2107.08813)

- 2021 **Investigation of hydro-mechanical processes in fluid-saturated fractured rock based on numerical model generation**
 joint work 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)
- 2020 **Multivariate Volume, Ehrhart and h^* -Polynomials of Polytopes**
 joint work with Sophia Elia and Leon Zhang
[arXiv:2006.01920](https://arxiv.org/abs/2006.01920)

Research Talks

Intersection Bodies of Polytopes

- 2021 Nonlinear Algebra Seminar
Max Planck Institute for Mathematics in the Sciences, Leipzig, Germany

The Positive Tropicalization of Low Rank Matrices

- 2021 Nonlinear Algebra Seminar
Max Planck Institute for Mathematics in the Sciences, Leipzig, Germany

Multivariate Volume, Ehrhart and h^* -Polynomials of Polytopes

- 2020 Research Seminar Discrete Geometry
Freie Universität Berlin, Germany

Product-Mix Auctions, Competitive Equilibrium and Lattice Polytopes

- 2019 Research Seminar Algebra and Geometry
Otto-von-Guericke-Universität Magdeburg, Germany
- 2018 Colloquium
Graduate School "Facets of Complexity", Berlin, Germany

Posters

- 2019 **Multivariate Volume, Ehrhart and h^* -Polynomials of Polytopes**
 Conference for Women in Algebra and Symbolic Computation
Bad Dürkheim, Germany

Teaching

- 2020 **Linear Algebra II**
 aimed at first-year math students
 Teaching Assistant
Freie Universität Berlin

- 2019 **Panorama der Mathematik**
aimed at first-year math teachers in training
Teaching Assistant
Freie Universität Berlin
- 2018 **Geometry**
aimed at advanced bachelor and early master students
Teaching Assistant
Freie Universität Berlin

Service

- 2019 - 2021 Co-organizer for a reading group on toric geometry
2019 Co-organizer of the Workshop *MATH+ Algebraic Geometry Research Retreat*

Extended Stays

- 06/2019 – **Max Planck Institute for Mathematics in the Sciences**
09/2019 Leipzig, Germany
Research Group: Non-Linear Algebra
- 01/2019 – **Simons Institute for the Theory of Computing**
02/2019 Berkeley, CA, USA
Program: Geometry of Polynomials