

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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| 2021 | Intersection Bodies of Polytopes
joint work with Katalin Berlow, Chiara Meroni and Isabelle Shankar
<i>Beiträge zur Algebra und Geometrie / Contributions to Algebra and Geometry, January 2022</i>
doi:10.1007/s13366-022-00621-7 |
| 2021 | Competitive equilibrium always exists for combinatorial auctions with graphical pricing schemes
joint work with Christian Haase and Ngoc Mai Tran
arXiv: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

- December 2021 **Intersection Bodies of Polytopes**
 Conference for Women in Algebra and Symbolic Computation II
 TU Kaiserslautern, Germany
- November 2021 **Intersection Bodies of Polytopes**
 Research Seminar Nonlinear Algebra
 Max Planck Institute for Mathematics in the Sciences, Leipzig, Germany
- May 2021 **The Positive Tropicalization of Low Rank Matrices**
 Research Seminar Nonlinear Algebra
 Max Planck Institute for Mathematics in the Sciences, Leipzig, Germany
- July 2020 **Multivariate Volume, Ehrhart and h^* -Polynomials of Polytopes**
 Research Seminar Discrete Geometry
 Freie Universität Berlin, Germany
- October 2019 **Competitive Equilibrium and Lattice Polytopes**
 Research Seminar Algebra and Geometry
 Otto-von-Guericke-Universität Magdeburg, Germany
- December 2018 **Product-Mix Auctions, Competitive Equilibrium and Lattice Polytopes**
 Colloquium
 Graduate School "Facets of Complexity", Berlin, Germany

Posters

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

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 – **Max Planck Institute for Mathematics in the Sciences**
September 2019 Leipzig, Germany
Research Group: Non-Linear Algebra
- January 2019 – **Simons Institute for the Theory of Computing**
February 2019 Berkeley, CA, USA
Program: Geometry of Polynomials