Marie-Charlotte Brandenburg

Curriculum Vitæ

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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 – 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: *A 4-Simple 4-Simplicial 8-Polytope* Advisor: Günter M. Ziegler

Publications

2022	**Intersection Bodies of Polytopes** with Katalin Berlow, Chiara Meroni and Isabelle Shankar *Beiträge zur Algebra und Geometrie / Contributions to Algebra and Geometry, 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

Preprints

2021	**Competitive equilibrium always exists for combinatorial auctions with graphical pricing schemes** with Christian Haase and Ngoc Mai Tran arXiv:2107.08813
2020	**Multivariate Volume, Ehrhart and h^*-Polynomials of Polytropes** with Sophia Elia and Leon Zhang accepted for publication in the *Special Issue of the Journal of Symbolic Computation on the occasion of MEGA 2021* arXiv:2006.01920

Research Talks

March 2022	**Competitive Equilibrium and Lattice Polytopes** Mini-Symposium on Lattice Polyopes *online*
February 2022	**Intersection Bodies of Polytopes** Colloqium *Graduate School "Facets of Complexity", Berlin, Germany*
December 2021	**Intersection Bodies of Polytopes** Conference for Women in Algebra and Symbolic Computation II *Technische Universität 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 Polytropes** 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 Polytropes** Conference for Women in Algebra and Symbolic Computation I *TU Kaiserslautern, Germany*

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** Consotrium 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