

CURRICULUM VITAE

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CONTACT

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EDUCATION AND ACADEMIA

10/22 – today **Postdoctoral researcher** with Prof. Kathlén Kohn in the multidisciplinary project *3D Scene Perception, Embeddings and Neural Rendering*
KTH Royal Institute of Technology, Stockholm

09/21 – 12/21 **Research stay** with Prof. Wojciech Chachólski
Brunner & Partners MathDataLab, KTH Royal Institute of Technology, Stockholm

07/19 – 09/22 **Postdoctoral researcher** in the field of algebraic and topological data analysis
Research Group in Nonlinear Algebra of Prof. Bernd Sturmfels
Max Planck Institute for Mathematics in the Sciences, Leipzig

10/15 – 05/19 **Doctoral studies in mathematics** in the field of algebraic analysis
Thesis: *Topological Computation of Stokes Data of Weighted Projective Lines*
Advisors: Prof. Marco Hien and Prof. Maxim Smirnov
University of Augsburg

10/13 – 07/15 **Master of Science with Honors** in mathematics within the program *TopMath*
Thesis: *From Turrittin–Levelt to the lower semi-continuity of families of \mathcal{D} -modules*
Technical University of Munich

10/12 – 09/13 **Additional certificate: Elite Bachelor** in the program *TopMath* of the *Elite Network of Bavaria*
University of Augsburg/Technical University of Munich

10/10 – 08/13 **Bachelor of Science** in mathematics, minor subject: philosophy
Thesis: *Irregularity and spectral norm of differential modules*
University of Augsburg

PUBLICATIONS AND PREPRINTS

arXiv, Google Scholar

- [12] **D-Module Techniques for Solving Differential Equations in the Context of Feynman Integrals** (with J. Henn, E. Pratt, and S. Zoia). Preprint arXiv:2303.11105. Submitted.
- [11] **D-Algebraic Functions** (with R. Ait El Manssour and B. Tegui Tabuguia). Preprint arXiv:2301.02512. Submitted.
- [10] **Vector Spaces of Generalized Euler Integrals** (with D. Agostini, C. Fevola, and S. Telen). Preprint arXiv:2208.08967, 2022. Submitted.
- [9] **Bayesian Integrals on Toric Varieties** (with M. Borinsky, B. Sturmfels, and S. Telen). *SIAM Journal on Applied Algebra and Geometry*, 7(1):77–103, 2023.
- [8] **The Shift-Dimension of Multipersistence Modules** (with W. Chachólski and R. Corbet). Preprint arXiv:2112.06509. Submitted.
- [7] **Nonlinear Algebra and Applications** (with P. Breiding, T. Çelik, T. Duff, A. Heaton, A. Maraj, L. Venturello, and O. Yürük). *Numerical Algebra, Control and Optimization*, 13(1):81–116, 2023.

- [6] **Combinatorial Differential Algebra of x^P** (with R. Ait El Manssour). *Journal of Symbolic Computation*, 114:193–208, 2023.
- [5] **Maximum Likelihood Estimation from a Tropical and a Bernstein–Sato Perspective** (with R. van der Veer). *International Mathematics Research Notices*, 2023(6):5263–5292, 2023.
- [4] **Algebraic Analysis of the Hypergeometric Function ${}_1F_1$ of a Matrix Argument** (with P. Görlach and C. Lehn). *Beiträge zur Algebra und Geometrie*, 62:397–427, 2021.
- [3] **Algebraic Analysis of Rotation Data** (with M. F. Adamer, A. C. Lőrincz, and B. Sturmfels). *Algebraic Statistics*, 11(2):189–211, 2020.
- [2] **D-Modules and Holonomic Functions** (with B. Sturmfels). Preprint arXiv:1910.01395. To appear in the volume *Varieties, polyhedra, computation of EMS Series of Congress Reports*.
- [1] **Topological Computation of Stokes Matrices of some Weighted Projective Lines**. *Manuscripta mathematica*, 164(3):327–347, 2021.

TEACHING AND WORK EXPERIENCE

Autumn 2023	PhD course on D-Modules and Holonomic Functions KTH Royal Institute of Technology and Stockholm University
Spring 2023	Lecturer of the undergraduate course Calculus in One Variable KTH Royal Institute of Technology, Stockholm
12/20 – 08/22	Equal Opportunity Officer Max Planck Institute for Mathematics in the Sciences, Leipzig
09/15 – 06/19	Research assistant of Prof. Marco Hien at the University of Augsburg <ul style="list-style-type: none"> ◊ Tutoring diverse lectures in Mathematics ◊ Tutoring and organizing a help desk for students of Mathematics ◊ Tutoring and organizing a study program for pupils
08/13 – 08/15	Scientific assistant in the project <i>Best MINT</i> of the Bavarian State Ministry for Education, Science and the Arts at the University of Augsburg
08/12 – 09/12	Intern at <i>SGL Carbon</i> in Meitingen Mathematical modeling of the extrusion of ceramic materials
10/11 – 07/13	Student assistant at the University of Augsburg Tutoring lectures on Linear Algebra and Commutative Algebra

SELECTED TALKS AND SCIENTIFIC ORGANIZATION

09/2023	DMV Annual Meeting 2023 Section: <i>Mathematics of Data Science</i> Invited talk: <i>TBA</i> TU Ilmenau
08/2023	ICIAM 2023 TOKYO Minisymposium: <i>Hypergeometric functions in statistics and particle physics</i> Invited talk: <i>D-Module Techniques for Solving Differential Equations behind Feynman Integrals</i> Waseda University, Tokyo
08/2023	Hypergeometric School Invited lecture series: <i>Algebraic and holonomic statistics</i> Kobe University

- 08/2023 **Amplitudes 2023**
Invited talk: *TBA*
CERN, Geneva
- 07/2023 **SIAM Conference on Applied Algebraic Geometry (AG23)**
Minisymposium: *Algebraic Invariants of Data*
Invited minisymposium talk: *Bayesian Integrals on Toric Varieties*
Eindhoven University of Technology
- 05/2023 **A Hypergeometric Day**
Invited lecture: *Introduction to D-Modules and GKZ systems*
MPI MiS, Leipzig
- 11/2022 **Uppsala/NORDITA amplitudes group meeting**
Invited talk: *Algebraic Analysis of Feynman Integrals*
Uppsala universitet
- 08/2022 **EWM General Meeting 2022**
Minisymposium: *Real algebraic geometry in action with a view toward optimization*
Invited talk: *Toric Varieties as Probability Spaces*
Aalto University, Helsinki
- 08/2022 **EWM General Meeting 2022**
Minisymposium: *Algebra and Geometry behind Data*
Scientific organizer together with Miruna-Ştefana Sorea, PhD
Aalto University, Helsinki
- 07/2022 **MIAPbP 2022 program: Novel Developments in Scattering Amplitudes**
Invited talk: *Vector Spaces of Generalized Euler Integrals*
Munich Institute for Astro-, Particle and BioPhysics, Garching
- 06/2022 **Algebraic Topology: Methods, Computation and Science (ATMCS10)**
Talk: *The Shift-Dimension: An Algebraic Invariant of Multipersistence Modules*
University of Oxford
- 06/2022 **AIToGeLiS Day**
One-day meeting of the consortium AIToGeLiS with moderated problem sessions
Scient. organizer w. Prof. Sandra Di Rocco, Prof. Liam Solus, and Francesca Tombari
KTH Royal Institute of Technology
- 05/2022 **Seminar on Statistics and Data Science**
Talk: *Bayesian Integrals on Toric Varieties*
TU Munich
- 05/2022 **Applied Topology Seminar**
Invited talk: *The Shift-Dimension: An Algebraic Invariant of Multiparameter Persistence Modules*
TU Munich
- 04/2022 **Special ITS Seminar on structures of Feynman integrals**
Invited talk: *D-Module Techniques in Physics*
ETH-ITS Zürich
- 03/2022 **Feynman Integrals and Nonlinear Algebra**
Talk: *Linear Differential Operators in the Study of Feynman Integrals*
MPI MiS, Leipzig
- 02/2022 **AIToGeLiS seminar**
Talk: *Algebraic Tools for Topological Data in a Multiparameter Setting*
MPI MiS, Leipzig

- 01/2022 **Mørketidens Mattemøte**
Invited talk: *The Shift-Dimension of Multipersistence Modules*
UiT – The Arctic University of Norway
- 11/2021 **Seminar Applied Combinatorics, Algebra, Topology & Statistics**
Invited talk: *Algebraic Aspects of Multiparameter-TDA*
KTH Royal Institute of Technology, Stockholm
- 08/2021 **SIAM Conference on Applied Algebraic Geometry (AG21)**
Session: Differential Equations in Algebraic Geometry and Beyond
Invited talk: *D-Modules in (Algebraic) Statistics*
Texas A&M University
- 07/2021 **Workshop on Math of Data**
Talk: *Stable Invariants for Multipersistence Modules*
MPI MiS, Leipzig
- 07/2021 **Mathematical Congress of the Americas**
Session: Differential operators in algebraic geometry and commutative algebra
Invited talk: *D-Modules in (Algebraic) Statistics*
University of Buenos Aires
- 06/2021 **Seminar on Nonlinear Algebra**
Talk: *How does an algebraic geometer interpret Taylor series?*
MPI MiS, Leipzig
- 06/2021 **MEGA 2021**
Talk: *Combinatorial Differential Algebra of x^p*
UiT – The Arctic University of Norway, Tromsø
- 04/2021 **Seminar on the Mathematics of Amplitudes**
Invited Talk: *MLE from a Tropical and a Bernstein–Sato Perspective*
IAS Princeton, MPI MiS Leipzig, and MPP Munich
- 02/2021 **Onlineseminar on Applied Algebra and Analysis**
Invited Talk: *MLE from a Tropical and a Bernstein–Sato Perspective*
TU Braunschweig and Osnabrück University
- 01/2021 **OSCAR rings in the new year**
Software presentation: Singular in OSCAR
MPI MiS, Leipzig
- 11/2020 **Workshop Computational Algebra 2020**
Invited talk: *Algebraic Analysis of the Hypergeometric Function ${}_1F_1$ of a Matrix Argument*
TU Kaiserslautern
- 09/2020 **Seminar on Nonlinear Algebra**
Talk: *Algebraic Tools for Topological Data Analysis*
MPI MiS, Leipzig
- 07/2020 **ICMS 2020 Session: Computational Algebraic Analysis**
Scientific organizer together with Dr. Christoph Koutschan
TU Braunschweig
- 03/2020 **Seminar Number Theory and Algebraic Geometry**
Invited talk: *D-modules: Linear PDEs from an algebraic perspective*
KU Leuven
- 11/2019 **Seminar on Symbolic Computation**
Invited talk: *Computational Algebraic Analysis*
RICAM, Linz

- 11/2019 **Geometric Analysis Seminar**
Invited talk: *D-modules and applications*
Goethe University of Frankfurt
- 10/2019 **European Women in Mathematics: German Chapter Conference 2019**
Talk: *Computational Algebraic Analysis*
MPI MiS, Leipzig
- 09/2019 **Fall School: Varieties, Polyhedra, Computation**
Exercise session accompanying a lecture series on *D-modules and holonomic functions* delivered by Prof. Bernd Sturmfels
Berlin Mathematics Research Center
- 09/2019 **Seminar: Computing with D-modules II**
Scientific organizer together with Prof. Christian Sevenheck
Talk: *Probability distributions as holonomic functions*
MPI MiS, Leipzig
- 08/2019 **Seminar: Computing with D-modules**
Talk: *How to compute? Part 2: Plural*
MPI MiS, Leipzig
- 05/2019 **Otto–Sturmfels Day**
Invited talk: *Algebraic Analysis: D-Modules and PDEs*
MPI MiS, Leipzig
- 04/2019 **Workshop: D-modules and the Riemann–Hilbert correspondence**
Invited talk: *Riemann–Hilbert for D-modules arising from weighted projective lines*
Humboldt University of Berlin

SCHOLARSHIPS AND ACHIEVEMENTS

- 11/2021 **Selected candidate for *Sign Up! Careerbuilding 2022***
Career building program of the Max Planck Society in cooperation with EAF Berlin
- 09/16 – 05/19 **German Academic Scholarship Foundation**
Doctoral scholarship
- 11/2015 **Hurwitz Society of the Technical University of Munich**
Honoring for the Master’s degree passed with distinction
- 10/12 – 09/15 **Max Weber-Program of the German Academic Scholarship Foundation**
Scholarship
- 04/11 – 03/13 **Deutschlandstipendium**

FURTHER QUALIFICATIONS

- Language **German** (native language) **English** (fluent)
French (advanced; level C1) **Italian** (upper intermediate; level B2)
Swedish (beginner; level A1)
- Teaching **Acquisition of the “Certificate for Teaching in Higher Education of the Bavarian Universities”**
Diverse soft skill courses on rhetoric, voice training, moderation, team heading, consulting students, and many more in the program ProfiLehre
- Interests ♦ **Music** (playing the piano, base guitar, and ukulele, singing)
♦ **Sports** (hiking, yoga, climbing, racing bike)
♦ **Painting** (partly inspired by mathematics)
♦ **Espresso**