

CURRICULUM VITAE

ANNA-LAURA SATTELBERGER, DR. RER. NAT.

CONTACT

Office address Department of Mathematics, KTH Royal Institute of Technology,
Lindstedtsvägen 25, 114 28 Stockholm, Sweden

E-mail mail@alsattelberger.de and alsat@kth.se

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

PUBLICATIONS AND PREPRINTS

- [11] **D-Algebraic Functions** (with R. Ait El Manssour and B. Tegui Tabuguia). In preparation.
- [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).
Preprint arXiv:2204.06414. Accepted for publication in SIAGA.
- [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*, 2021.
- [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*, rnac016, 2022.
- [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. Lórinicz, 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

- 12/20 – 08/22 **Equal Opportunity Representative**
Max Planck Institute for Mathematics in the Sciences, Leipzig, Germany
- 09/15 – 06/19 **Research assistant** of Prof. Marco Hien at the University of Augsburg, Germany
 ◇ 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 *Best MINT*** of the Bavarian State Ministry for Education, Science and the Arts at the University of Augsburg, Germany
- 08/12 – 09/12 **Intern** at *SGL Carbon* in Meitingen, Germany
Mathematical modeling of the extrusion of ceramic materials
- 10/11 – 07/13 **Student assistant** at the University of Augsburg, Germany
Tutoring lectures on Linear Algebra and Commutative Algebra

SELECTED TALKS AND SCIENTIFIC ORGANIZATION

- 02/2023 **Joint MATHEXO-PolSys Seminar**
Invited talk: *TBA*
Centre Inria de Saclay, Palaiseau
- 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
- 02/2022 **Nonlinear Algebra Seminar Online**
Talk: *Linear Differential Operators in the Sciences*
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 <i>Sign Up! Careerbuilding 2022</i> 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)
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	<ul style="list-style-type: none"> ◇ Music (playing the piano, base guitar, and ukulele, singing) ◇ Sports (hiking, yoga, climbing, racing bike, swimming) ◇ Painting (partly inspired by mathematics) ◇ Espresso

REFERENCES

- ◇ **Prof. Dr. Bernd Sturmfels**
Max-Planck-Institut für Mathematik in den Naturwissenschaften
Inselstraße 22, D-04103 Leipzig
bernd@mis.mpg.de
- ◇ **Prof. Dr. Kathlén Kohn**
Department of Mathematics, KTH Royal Institute of Technology
Lindstedtsvägen 25, SE-114 28 Stockholm
kathlen@kth.se
- ◇ **Prof. Dr. Paul Breiding**
Universität Osnabrück, Fachbereich Mathematik/Informatik
Albrechtstr. 28a, D-49076 Osnabrück
pbreiding@ni-osnabrueck.de
- ◇ **Prof. Dr. Christian Lehn**
TU Chemnitz, Fakultät für Mathematik
D-09107 Chemnitz
christian.lehn@mathematik.tu-chemnitz.de