

CURRICULUM VITAE

ANNA-LAURA SATTELBERGER, DR. RER. NAT.

CONTACT

Office address Max Planck Institute for Mathematics in the Sciences
Inselstraße 22, 04103 Leipzig, Germany

E-mail anna-laura.sattelberger@mis.mpg.de

EDUCATION AND ACADEMIA

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

07/19 – today **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

2022 **Bayesian Integrals on Toric Varieties** (with M. Borinsky, B. Sturmfels, and S. Telen).
Preprint arXiv:2204.06414. Submitted.

2021 **The Shift-Dimension of Multipersistance Modules** (with W. Chachólski and
R. Corbet). Preprint arXiv:2112.06509. Submitted.

2021 **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*.

2022 **Combinatorial Differential Algebra of x^P** (with R. Ait El Manssour). *Special Issue
of the Journal of Symbolic Computation on the occasion of MEGA 2021*.

2022 **Maximum Likelihood Estimation from a Tropical and a Bernstein–Sato
Perspective** (with R. van der Veer). *IMRN*, rna016, 2022.

2021 **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.

2020 **Algebraic Analysis of Rotation Data** (with M. F. Adamer, A. C. Lőrincz, and
B. Sturmfels). *Algebraic Statistics*, 11(2):189–211, 2020.

2019 **D-Modules and Holonomic Functions** (with B. Sturmfels). arXiv:1910.01395.
To appear in *Varieties, polyhedra, computation of EMS Series of Congress Reports*.

2021 **Topological computation of Stokes matrices of some weighted projective lines**.
Manuscripta mathematica, 164(3):327–347, 2021.

TEACHING AND WORK EXPERIENCE

- 12/2020 – today **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 ORGANIZING

- 08/2022 **EWM General Meeting 2022**, Minisymposium: *Algebra and Geometry behind Data*
Scientific organization together with Dr. Miruna-Ştefana Sorea
Aalto University, Helsinki
- 06/2022 **Algebraic Topology: Methods, Computation and Science (ATMCS10)**
Talk: *The Shift-Dimension: An Algebraic Invariant of Multipersistence Modules*
University of Oxford
- 06/2022 **Workshop on Differential Algebra**
Invited talk: *Combinatorial Differential Algebra*
MPI MiS, Leipzig
- 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 Pizza-Lunch-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*
University of Tromsø – 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*
University of Tromsø – The Arctic University of Norway
- 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 organization 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 organization of the seminar 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

- 2022 **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)
- 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, 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. Christian Lehn**

TU Chemnitz, Fakultät für Mathematik
D-09107 Chemnitz
christian.lehn@mathematik.tu-chemnitz.de

◇ **Prof. Dr. Wojciech Chachólski**

KTH Royal Institute of Technology
Lindstedtsvägen 25, SE-10044 Stockholm
wojtek@math.kth.se