Marius Müller

June 14, 1993 in
Engelskirchen, Germany

Universitätsstraße 14,
86159 Augsburg

www.mariusmueller.art

marius1.mueller@uni-a.de

Social Networks

Researchgate Link

Languages

- German
- English
- Italian
- Japanese

Computing

- MatLab
- Mathematica
- Sage
- Java

Volunteering

As a student: treasurer of the student representation ('Fachschaft').

As a PhD student: speaker of Ulm PhD community (organization of networking events and invitations to mathematical colloquium) (Click for Information).

Referee activities for J. London Math. Soc., Comm. PDE, Calc. Var. PDE, Bull. London. Math. Soc, Z. Anal. Anwend., Comm. Anal. Geom., Math. Eng., Interfaces Free Bound., Appl. Math., J. Geom. Anal., Ann. Mat. Pura Appl., Math. Ann.

Currently: Math Club for high school students "Mathezirkel" (Click for Information)

Education and Academic Background

Aug 2023 – now — **Mittelbau position (Institutskoordinator)** — Augsburg University
Mathematisches Institut.

Oct 2022 – Jul 2023 — **Substitute Professor (Vertretungsdozent)** — Leipzig University
Abteilung Analysis.

Oct 2020 – Jul 2022 — **Postdoc Position (Akad. Rat auf Zeit)** — Freiburg University
Institut für Reine Mathematik,
Group "Analysis" (Ernst Kuwert and Guofang Wang).

Jun 2017 – Oct 2020 — **PhD Studies** — Ulm University
Supervisor: Anna Dall'Acqua, Reviewers: Matteo Novaga (Pisa) and Matthias Röger (Dortmund). Grade: summa cum laude.
PhD Thesis:
Elastic bending – Variational problems and their geometry.

Aug 2016 – May 2017 — **M.Sc. "Mathematics"** — Syracuse University, USA
Double Degree Exchange Program. GPA: A.

Feb 2015 – Jul 2016 — **M.Sc "Mathematik"** — Ulm University
Minor Subject: Physics. GPA: 1,0.
Master Thesis:
Anisotropic Curvature.
Supervisor: Anna Dall'Acqua.

Oct 2011 – Feb 2015 — **B. Sc. "Wirtschaftsmathematik"** — Ulm University
(≙ "Mathematics and Economy"). GPA: 1,3.
Bachelor Thesis:
Two Approaches to the Hardy Uncertainty Principle.
Supervisor: Anna Dall'Acqua.

2011 — **High School "Allgemeine Hochschulreife"** — Gymnasium Lindlar
GPA: 1,7.

Awards

2022 — **PhD Thesis Award** — Ulm University
"Promotionspreis der Ulmer Universitätsgesellschaft", 1500 €.

2021 — **Teaching Award** — Freiburg University
"Lehrpreis der Fachschaft Mathematik WiSe20/21."
(Click for information)

2017 — **Graduation Award** — Ulm University
"Absolventenpreis Mathematik M.Sc. 2017 Uni Ulm."

Selected Grants

2017–2020 — **LGFG Grant** — Ulm University
PhD income grant, LGFG≙"Landegraduiertenförderungsgesetz", grant no. 1705 LGFG-E.

2016 — **Fulbright Travel Grant** — Fulbright Association
Travel expenses for exchange year in Syracuse, NY, USA.

List of Publications

Published articles

2019 **1. An obstacle problem for elastic curves: existence results**
M. Müller
Interfaces Free Bound. DOI: 10.4171/IFB/418 (Click)

2019 **2. On gradient flows with obstacles and Euler's elastica**
M. Müller
Nonlinear Anal. DOI: 10.1016/j.na.2019.111676 (Click)

2020 **3. On the convergence of the elastic flow in the hyperbolic plane**
M. Müller and A. Spener
Geom. Flows DOI: 10.1515/geofl-2020-0002 (Click)

2020 **4. The elastic flow with obstacles: small obstacle results**
M. Müller
Appl. Math. Optim. DOI: 10.1007/s00245-021-09773-9 (Click)

2021 **5. A Li-Yau inequality for the 1-dimensional Willmore energy**
M. Müller and F. Rupp
Adv. Calc. Var. DOI: 10.1515/acv-2021-0014 (Click)

2022 **6. The Poisson equation involving surface measures**
M. Müller
Comm. PDE. DOI: 10.1080/03605302.2021.2013882 (Click) (Erratum)

2022 **7. The biharmonic Alt-Caffarelli Problem in 2D**
M. Müller
Ann. Mat. Pura Appl. DOI: 10.1007/s10231-021-01178-3 (Click)

2023 **8. Optimal thresholds for preserving embeddedness of elastic flows**
T. Miura, M. Müller and F. Rupp
Amer. J. Math. DOI: 10.1353/ajm.2025.a950273 (Click)

2023 **9. Polyharmonic equations involving surface measures**
M. Müller
Interfaces Free Bound. DOI: 10.4171/IFB/503 (Click)

2023 **10. The Willmore flow of tori of revolution**
A. Dall'Acqua, M. Müller, R. Schätzle and A. Spener
Analysis & PDE. DOI: 10.2140/apde.2024.17.3079 (Click)

2023 **11. On elliptic equations involving surface measures**
M. Müller
Ann. Sc. Norm. Super. Pisa Cl. Sci. DOI: 10.2422/2036-2145.202303_012 (Click)

2024 **12. A biharmonic analogue of the Alt-Caffarelli problem**
H. C. Grunau and M. Müller
Math. Annalen DOI: 10.1007/s00208-024-02883-z (Click)

2024 **13. An obstacle problem for the $p-$elastic energy**
A. Dall'Acqua, M. Müller, S. Okabe and K. Yoshizawa
Calc. Var. PDE. DOI: 10.1007/s00526-024-02752-2 (Click)

2024 **14. Curvature varifolds with orthogonal boundary**
E. Kuwert and M. Müller
J. London Math. Soc. DOI: 10.1112/jlms.12976 (Click)

2025 **16. A nongraphical obstacle problem for elastic curves**
M. Müller and K. Yoshizawa
Accepted for publication in Indiana Univ. Math. J. Click here to view preprint

2025 **16. Classification and stability of penalized pinned elasticae**
M. Müller and K. Yoshizawa
Accepted for publication in J. Differential Equations Click here to view preprint

2026 **17. Short closed geodesics and the Willmore energy**
M. Müller, F. Rupp and C. Scharrer
J. Differ. Geom. DOI: 10.4310/jdg/1770825761 (Click)

Preprints

2025 **18. Dimension reduction for Willmore flows of tori: fixed conformal class and analysis of singularities**
A. Dall'Acqua, M. Müller, F. Rupp and M. Schlierf
Click here to view preprint

2025 **19. An anisotropic Alt-Caffarelli problem of higher order**
M. Müller
Click here to view preprint

2026 **20. Global minimizers for a two-sided biharmonic Alt-Caffarelli problem**
H. C. Grunau and M. Müller
Click here to view preprint

List of Talks/Posters/Workshops

Talks

12/2018	**EDDY Weekly Seminar** *On gradient flows with obstacles and Euler's elastica*	RWTH Aachen
07/2019	**TULKKA-Treffen** *The biharmonic Alt-Caffarelli problem* (Link)	KIT Karlsruhe
11/2019	**Winter School 'Gradient flows & Variational Methods in PDEs'** *On gradient flows with obstacles* (Link)	Ulm University
12/2020	**Online Seminar Geometric Analysis** *The Willmore flow of tori of revolution* (Youtube video)	Online (University Salzburg)
07/2021	**Applied Analysis Seminar Heidelberg** *The biharmonic Alt-Caffarelli problem* (Link)	Online (Heidelberg University)
09/2021	**DMV-Tagung, Sektion "Variationsrechnung, geometrische Analysis"** *Embeddedness-breaking of elastic flows*	Online (University of Passau)
10/2021	**Probability, Differential Geometry and Mathematical Physics** *Embeddedness-breaking of elastic flows* (Link)	Online (Texas Tech University)
12/2021	**Oberseminar Angewandte Mathematik** *An obstacle problem for the p−elastic energy* (Link)	Freiburg University
12/2021	**Geometric PDEs in Freiburg** *Curvature minimization with perpendicular free boundary* (Link)	Freiburg University
01/2022	**TiTech analysis seminar** *The Poisson equation involving surface measures* (Link)	Tokyo Institute of Technology
02/2022	**Geometric analysis seminar** *An obstacle problem for the p−elastic energy* (Link)	Online (OVGU Magdeburg)
03/2022	**SIAM Conference on Analysis of PDE, Section 'Curvature energies'** *Curvature minimization with perpendicular free boundary* (Link)	Online (Berlin)
04/2022	**Geometric Analysis Festival** *An obstacle problem for the p−elastic energy* (Youtube Video)	Online
09/2022	**Summer School "Horizons in nonlinear PDE"** *The Poisson equation involving surface measures* (Link)	Ulm University
11/2022	**Oberseminar Analysis** *Elliptic equations with surface measures* (Link)	Leipzig University
11/2022	**Research Seminar Analysis** *Embeddedness-breaking of elastic flows* (Link)	Chemnitz University
12/2022	**Jeunes Matematicien.ne.es en Geometrie et Analyse** *Elliptic PDEs with surface measures* (Link)	Mulhouse
01/2023	**FHST meeting** *Embeddedness-breaking of elastic flows* (Link)	Tübingen
03/2023	**Geometry Day Leipzig** *The Willmore flow of tori of revolution* (Link)	Leipzig
07/2023	**Oberseminar Differentialgeometrie** *Short closed geodesics and the Willmore energy* (Link)	Augsburg
07/2023	**n-Cities Seminar** *The biharmonic Alt-Caffarelli problem* (Link)	Halle
07/2024	**Faszination Mathematik und Physik** *Elastische Biegung – von Euler bis zur Gegenwart (allgemeinverständlicher Vortrag)* (Link)	Augsburg

10/2024 **Nonlinear Partial Differential Equations in Freiburg** Freiburg
Short closed geodesics and the Willmore energy (Link)

01/2025 **Oberseminar Differentialgeometrie** Münster
Short closed geodesics and the Willmore energy (Link)

03/2025 & 02/2026 **Tag der Mathematik Universität Augsburg** Augsburg
Mathematik vernetzt! Wege in Netzen suchen (Link)

07/2025 **Augsburg Munich Analysis Seminar** Augsburg
The biharmonic Alt-Caffarelli problem (Link)

09/2025 **DMV-ÖMG-Jahrestagung (Minisymposium Higher Order Variational Problems in Analysis and Geometry)** Linz
The biharmonic Alt-Caffarelli problem (Link)

09/2025 **Recontres du RT Optimisation / Calcul des variations, Institut Fourier** Grenoble
The biharmonic Alt-Caffarelli problem (Link)

03/2026 **Horizons in Nonlinear PDEs** Ulm
The biharmonic Alt-Caffarelli problem (Link)

04/2026 **Vienna Geometric Analysis Seminar** Vienna
The geometry behind interface transmission problems (Link)

Organized Workshops

2018 & 2019 **Ulm PhD networking workshop** Kleinwalsertal, Austria
sponsored by PROMOS (by DAAD)
joint with M. Sauter (Ulm). (Click for Information)

04/2021 **Online Poster Session "Young researchers in PDE and geometric analysis"** Online (Freiburg University)
joint with P. Gladbach and S. Jarohs (Click for Information)

Posters

2019 **Elastica in the hyperbolic plane** (Link)

2020 **A biharmonic Bernoulli problem** (Link)

2026 **An obstacle problem for elasticae** (Link)

List of Teaching Experience

2012-2016 — **Several jobs as Grader & Tutor** — Ulm University
Including tutorials for a total of 11 modules.
Among those the 4-week University preparation course 'Uni-Trainingscamp' (Link)
and exam preparation tutorials ('Repetitorien').

2016 — **Teaching Assistant Orientations** — Syracuse University, USA
4-week pedagogical training prior to US-teaching assistant positions

Fall 2016 — **Teaching Assistant "Calculus 3"** — Syracuse University, USA
Bachelor's course, course instructor: Loredana Lanzani.
Responsibilites: Tutorial sessions, grading of weekly quizzes and midterm exams.

Spring 2017 — **Teaching Assistant "Calculus 2"** — Syracuse University, USA
Bachelor's course, course instructor: Jeff Meyer.
Responsibilites: content and grading of weekly quizzes, grading of midterm exams, tutorial sessions.

Summer 2017 — **Teaching Assistant "Elemente der Funktionalanalysis"** — Ulm University
($\widehat{=}$ Elementary Functional Analysis). Bachelor's course, course Instructor: Jochen Glück.
Responsibilities: content and solutions of exercise sheets and presentation thereof. (Link)

Summer 2017 — **Teaching Assistant "Elemente der Funktionentheorie"** — Ulm University
($\widehat{=}$ Elementary Complex Analysis). Bachelor's course, course instructor: Friedmar Schulz.
Responsibilites: content and solutions of exercise sheets and presentation thereof.

Winter 2017 — **Teaching Assistant "Variationsrechnung"** — Ulm University
($\widehat{=}$ Calculus of Variations). Master's course, course Instructor: Anna Dall'Acqua.
Responsibilites: content and solutions of exercise sheets and presentation thereof.

Summer 2018 — **Teaching Assistant "Elementare Differenzialgeometrie"** — Ulm University
($\widehat{=}$ Elementary Differential Geometry). Bachelor's course, course instructor: Julian Scheuer.
Responsibilites: solutions of exercise sheets and presentation thereof (Link).

Winter 2019 — **Teaching Assistant "Advanced Topics in the Calculus of Variations"** — Ulm University
Master's course, course instructors: Anna Dall'Acqua and Emil Wiedemann.
Responsibilites: content and solutions of exercise sheets (Link).

Summer 2020 — **Teaching Assistant "Riemann'sche Geometrie"** — Online (Ulm University)
($\widehat{=}$ Riemannian Geometry). Master's course, course Instructor: Anna Dall'Acqua.
Responsibilites: content and solutions of exercise sheets, screencast video content.

Winter 2020 — **Teaching Assistant "Analysis 3"** — Online (Freiburg University)
Bachelor's course, course instructor: Ernst Kuwert.
Responsibilities: video solutions to exercise sheets, content of in-class quizzes, tech support. (Link)
Teaching Award "Lehrpreis der Fachschaft Mathematik"

Winter 2020 — **Assistant for Student Seminar "Geometrie ebener Kurven"** — Online (Freiburg University)
($\widehat{=}$ Geometry of plane curves). Master's course, instructor: Ernst Kuwert.
Responsibilites: support of students in preparation of their talks.

Summer 2021 — **Teaching Assistant "Elementare Differentialgeometrie"** — Online (Freiburg University)
($\widehat{=}$ Elementary Differential Geometry). Bachelor's & master's course, instructor: Ernst Kuwert.
Responsibilities: Video solutions to exercise sheets, content of in-class quizzes, tech support. (Link)

Summer 2021 — **Assistant for Student Seminar "Differentialformen"** — Online (Freiburg University)
($\widehat{=}$ Differential forms). Master's course, instructor: Ernst Kuwert.
Responsibilites: Preparatory online lectures, support of students in preparation of their talks.

Winter 2021 — **Course Instructor "Gewöhnliche Differentialgleichungen"** — Freiburg University and Online
($\widehat{=}$ Ordinary Differential Equations). Bachelor's course.
Responsibilities: Course instructor – content of lectures and exercises. (Link)

Summer 2022 — **Teaching Assistant "Kurven und Flächen"** — Freiburg University
($\widehat{=}$ Curves and surfaces). Bachelor's course, instructor: Christian Ketterer.
Responsibilities: Exercise classes. (Link)

Summer 2022 — **Assistant for Seminar "Analysis"** — Freiburg University
($\widehat{=}$ Curves and surfaces). Bachelor's course, instructor: Guofang Wang.
Responsibilities: Support of students in preparation of their talks.

List of Teaching Experience – cont'd

Winter 2022	**Course Instructor "Gewöhnliche Differentialgleichungen"** (≙ Ordinary Differential equations). Bachelor's basic course. Responsibilities: Course instructor — content of lectures and exercises (LINK)	Leipzig University
Winter 2022	**Course Instructor "Seminar zur Schulmathematik – Ebene Kurven"** (≙ Seminar for math education students – geometry of planar curves). Seminar course. Responsibilities: Preparing and assigning projects and supervision of students.	Leipzig University
Summer 2023	**Course Instructor "Funktionentheorie"** (≙ Complex Analysis). Bachelor's basic course. Responsibilities: Course instructor — content of lectures and exercises	Leipzig University
Summer 2023	**Seminar Assistant "Mathematics and Climate"** Master's course (in mathematical physics). Course instructor: Laszlo Szekelyhidi. Responsibilities: Support of students in preparation of their seminar talks	Leipzig University
Winter 2023	**Course Instructor "Analysis 1"** Bachelor's basic course. Responsibilities: Course instructor – content of lectures and exercises.	Augsburg University
Winter 2023	**Exercise group "Analysis 1"** Exercise class for bachelor's basic course. Responsibilities: Homework assignment, grading of exercises, sample solutions.	Augsburg University
Winter 2023 - present	**Supervision "Offener Matheraum – Kernzeit Lehramt"** (≙ Homework aid center for math education students) Responsibilities: Homework aid and individual support for math education students.	Augsburg University
Winter 2023 - present	**Supervision "Betriebspraktikum Mathematik und Wirtschaftsmathematik"** (≙ Mandatory internship) Responsibilities: Communication of job opportunities, review of internship reports.	Augsburg University
Summer 2024	**Course Instructor "Analysis 2"** Bachelor's basic course. Responsibilities: Course instructor – content of lectures and exercises.	Augsburg University
Summer 2024	**Exercise group "Analysis 2"** Exercise class for bachelor's basic course. Responsibilities: Homework assignment, grading of exercises, sample solutions.	Augsburg University
Winter 2024	**Course Instructor "Analysis 3"** Bachelor's basic course. Responsibilities: Course instructor – content of lectures and exercises.	Augsburg University
Winter 2024	**Exercise group "Analysis 3"** Exercise class for bachelor's basic course. Responsibilities: Homework assignment, sample solutions.	Augsburg University
Summer 2025	**Lecture "Vernetzung math. Inhalte für Grund/Mittel/Realschullehramt"** Repetition course for math education students in preparation of their final examinations. Responsibilities: Content of lecture, Sample solutions.	Augsburg University
Winter 2025	**Course Instructor "Analysis 1"** Bachelor's basic course Responsibilities: Course instructor – content of lectures and exercises.	Augsburg University
Summer 2026	**Course Instructor "Analysis 2"** Bachelor's basic course Responsibilities: Course instructor – content of lectures and exercises.	Augsburg University
Summer 2026	**Course Instructor "Distributions, Fourier Analysis & Quantum Mechanics"** Advanced Bachelor's course Responsibilities: Course instructor – content of lectures and exercises (shared with Santiago Correa and Antonio Donnarumma).	Augsburg University