Marius Müller

June 14, 1993 in
Engelskirchen, Germany

Arbeitsgruppe Analysis
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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).

As a postdoc: member of a hiring committee as Mittelbau representative

AMS MathSciNet Reviewer.

Referee activites for "Comm. Anal. Geom.", "Math. Eng.", "Interfaces Free Bound.", "Appl. Math.", "J. Geom. Anal."

Education and Academic Background

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

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.

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

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

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.

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

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

Aug 2022 – now — **Lecturer position (Institutskoordinator)** — Augsburg University
Mathematisches Institut.

Awards

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

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

2022 — **PhD Thesis Award** — Ulm University
"Promotionspreis der Ulmer Universitätsgesellschaft", 1500 €. (Click for information)

Selected Grants

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

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

List of Publications

Published articles

2019 **1. An obstacle problem for elastic curves: existence results**
M. Müller
Interfaces Free Bound. **21**. DOI: 10.4171/IFB/418 (Click)

2019 **2. On gradient flows with obstacles and Euler's elastica**
M. Müller
Nonlinear Anal. **192**. 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 **5**. DOI: 10.1515/geofl-2020-0002 (Click)

2020 **4. The elastic flow with obstacles: small obstacle results**
M. Müller
Appl. Math. Optim. **184.** 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. (ahead of print) DOI: 10.1515/acv-2021-0014 (Click)

2022 **6. The Poisson equation involving surface measures**
M. Müller
Comm. PDE. **47**. DOI: 10.1080/03605302.2021.2013882 (Click)

2022 **7. The biharmonic Alt-Caffarelli Problem in 2D**
M. Müller
Ann. Mat. Pura Appl. **201**. 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
Accepted for publication in Amer. J. Math. Click here to view preprint

2023 **9. Polyharmonic equations involving surface measures**
M. Müller
Accepted for publication in Interfaces Free Bound. Click here to view preprint

2023 **10. The Willmore flow of tori of revolution**
A. Dall'Acqua, M. Müller, R. Schätzle and A. Spener
Accepted for publication in Analysis & PDE. Click here to view preprint

Preprints

2022 **11. An obstacle problem for the $p-$elastic energy**
A. Dall'Acqua, M. Müller, S. Okabe and K. Yoshizawa
Click here to view preprint

2022 **12. Curvature varifolds with orthogonal free boundary**
E. Kuwert and M. Müller
Click here to view preprint

2022 **13. On elliptic equations involving surface measures**
M. Müller
Click here to view preprint

2023 **14. A biharmonic analogue of the Alt-Caffarelli problem**
H. C. Grunau and M. Müller
Click here to view preprint

2023 **15. Short closed geodesics and the Willmore energy**
M. Müller, F. Rupp and C. Scharrer
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...'** *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

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)

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 — **Lecturer "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	**Lecturer "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"** (≙ Complex Analysis). Master's course (in mathematical physics). Course instructor: Laszlo Szekelyhidi. Responsibilities: Support of students in preparation of their seminar talks	Leipzig University