









# Marius Müller

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-  Arbeitsgruppe Analysis Ernst-Zermelo-Straße 1, 79104 Freiburg
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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](#)).
-  AMS MathSciNet Reviewer.  
Referee activities for "Comm. Anal. Geom.", "Math. Eng.", "Interfaces Free Bound.", "Appl. Math."

## Education and Academic Background

2011	<b>High School "Allgemeine Hochschulreife"</b> GPA: 1,7.	Gymnasium Lindlar
Oct 2011 – Feb 2015	<b>B. Sc. "Wirtschaftsmathematik"</b> ( $\cong$ "Mathematics and Economy"). GPA: 1,3. <b>Bachelor Thesis:</b> <i>Two Approaches to the Hardy Uncertainty Principle.</i> Supervisor: Anna Dall'Acqua.	Ulm University
Feb 2015 – Jul 2016	<b>M.Sc "Mathematik"</b> Minor Subject: Physics. GPA: 1,0. <b>Master Thesis:</b> <i>Anisotropic Curvature.</i> Supervisor: Anna Dall'Acqua.	Ulm University
Aug 2016 – May 2017	<b>M.Sc. "Mathematics"</b> Double Degree Exchange Program. GPA: A.	Syracuse University, USA
Jun 2017 – Oct 2020	<b>PhD Studies</b> Supervisor: Anna Dall'Acqua, Reviewers: Matteo Novaga (Pisa) and Matthias Röger (Dortmund). Grade: summa cum laude. <b>PhD Thesis:</b> Elastic bending – Variational problems and their geometry.	Ulm University
Oct 2020 – now (currently paused)	<b>Postdoc Position (Akad. Rat auf Zeit)</b> Institut für Reine Mathematik, Group "Analysis" (Ernst Kuwert and Guofang Wang).	Freiburg University
Oct 2022 – now	<b>Substitute Professor (Vertretungsdozent)</b> Abteilung Analysis.	Leipzig University

## Working Experience

Aug 2014 – Oct 2014	<b>Internship at "Fraunhofer ITWM"</b> Topic: Statistical methods for multistep experimental designs. Supervisor: Sascha Feth.	Kaiserslautern
2012 – now	<b>Teaching (see separate section)</b>	Ulm/Syracuse/Freiburg

## Awards

2017	<b>Graduation Award</b> "Absolventenpreis Mathematik M.Sc. 2017 Uni Ulm."	Ulm University
2021	<b>Teaching Award</b> "Lehrpreis der Fachschaft Mathematik WiSe20/21." ( <a href="#">CLICK FOR INFORMATION</a> )	Freiburg University
2022	<b>PhD Thesis Award</b> "Promotionspreis der Ulmer Universitätsgesellschaft", 1500 €. ( <a href="#">CLICK FOR INFORMATION</a> )	Ulm University

## Selected Grants

2016	<b>Fulbright Travel Grant</b> Travel expenses for exchange year in Syracuse, NY, USA.	Fulbright Association
2017–2020	<b>LGFG Grant</b> PhD income grant, LGFG $\cong$ "Landegraduiertenförderungsgesetz", grant no. 1705 LGFG-E.	Ulm University

# List of Publications

## Published articles

- 2019                    **1. An obstacle problem for elastic curves: existence results**  
*M. Müller*  
Interfaces Free Bound. **21**. [CLICK HERE TO VIEW ARTICLE](#)  
DOI: 10.4171/IFB/418
- 2019                    **2. On gradient flows with obstacles and Euler's elastica**  
*M. Müller*  
Nonlinear Anal. **192**. [CLICK HERE TO VIEW ARTICLE](#)  
DOI: 10.1016/j.na.2019.111676
- 2020                    **3. On the convergence of the elastic flow in the hyperbolic plane**  
*M. Müller and A. Spener*  
Geom. Flows **5**. [CLICK HERE TO VIEW ARTICLE](#)  
DOI: 10.1515/geoff-2020-0002
- 2020                    **4. The elastic flow with obstacles: small obstacle results**  
*M. Müller*  
Appl. Math. Optim. **184**. [CLICK HERE TO VIEW ARTICLE](#)  
DOI: 10.1007/s00245-021-09773-9
- 2021                    **5. A Li-Yau inequality for the 1-dimensional Willmore energy**  
*M. Müller and F. Rupp*  
Adv. Calc. Var. (ahead of print) [CLICK HERE TO VIEW ARTICLE](#)  
DOI: 10.1515/acv-2021-0014
- 2022                    **6. The Poisson equation involving surface measures**  
*M. Müller*  
Comm. Partial Differential Equations (ahead of print) [CLICK HERE TO VIEW ARTICLE](#)  
DOI: 10.1080/03605302.2021.2013882
- 2022                    **7. The biharmonic Alt-Caffarelli Problem in 2D**  
*M. Müller*  
Ann. Mat. Pura Appl. [CLICK HERE TO VIEW ARTICLE](#)  
DOI: 10.1007/s10231-021-01178-3

## Preprints

- 2020                    **8. The Willmore flow of tori of revolution**  
*A. Dall'Acqua, M. Müller, R. Schätzle and A. Spener*  
[CLICK HERE TO VIEW PREPRINT](#)
- 2021                    **9. Optimal thresholds for preserving embeddedness of elastic flows**  
*T. Miura, M. Müller and F. Rupp*  
[CLICK HERE TO VIEW PREPRINT](#)
- 2022                    **10. An obstacle problem for the  $p$ -elastic energy**  
*A. Dall'Acqua, M. Müller, S. Okabe, K. Yoshizawa*  
[CLICK HERE TO VIEW PREPRINT](#)
- 2022                    **11. Curvature varifolds with orthogonal free boundary**  
*E. Kuwert and M. Müller*  
[CLICK HERE TO VIEW PREPRINT](#)

# List of Talks/Posters/Workshops

## Talks

12/2018	<b>EDDY Weekly Seminar</b> <i>On gradient flows with obstacles and Euler's elastica</i>	RWTH Aachen
07/2019	<b>TULKKA-Treffen</b> <i>The biharmonic Alt-Caffarelli problem</i> (LINK)	KIT Karlsruhe
11/2019	<b>Winter School 'Gradient flows...'</b> <i>On gradient flows with obstacles</i> (LINK)	Ulm University
12/2020	<b>Online Seminar Geometric Analysis</b> <i>The Willmore flow of tori of revolution</i> (YOUTUBE VIDEO)	Online (University Salzburg)
07/2021	<b>Applied Analysis Seminar Heidelberg</b> <i>The biharmonic Alt-Caffarelli problem</i> (LINK)	Online (Heidelberg University)
09/2021	<b>DMV-Tagung, Sektion "Variationsrechnung, geometrische Analysis"</b> <i>Embeddedness-breaking of elastic flows</i>	Online (University of Passau)
10/2021	<b>Probability, Differential Geometry and Mathematical Physics</b> <i>Embeddedness-breaking of elastic flows</i> (LINK)	Online (Texas Tech University)
12/2021	<b>Oberseminar Angewandte Mathematik</b> <i>An obstacle problem for the <math>p</math>-elastic energy</i> (LINK)	Freiburg University
12/2021	<b>Geometric PDEs in Freiburg</b> <i>Curvature minimization with perpendicular free boundary</i> (LINK)	Freiburg University
01/2022	<b>TiTech analysis seminar</b> <i>The Poisson equation involving surface measures</i> (LINK)	Tokyo Institute of Technology
02/2022	<b>Geometric analysis seminar</b> <i>An obstacle problem for the <math>p</math>-elastic energy</i> (LINK)	Online (OVGU Magdeburg)
03/2022	<b>SIAM Conference on Analysis of PDE, Section 'Curvature energies'</b> <i>Curvature minimization with perpendicular free boundary</i> (LINK)	Online (Berlin)
04/2022	<b>Geometric Analysis Festival</b> <i>An obstacle problem for the <math>p</math>-elastic energy</i> (YOUTUBE VIDEO)	Online
09/2022	<b>Summer School "Horizons in nonlinear PDE"</b> <i>The Poisson equation involving surface measures</i> (LINK)	Ulm University

## Organized Workshops

2018 & 2019	<b>Ulm PhD networking workshop</b> sponsored by PROMOS (by DAAD) joint with M. Sauter (Ulm). (CLICK FOR INFORMATION)	Kleinwalsertal, Austria
04/2021	<b>Online Poster Session "Young researchers in PDE and geometric analysis"</b> joint with P. Gladbach and S. Jarohs (CLICK FOR INFORMATION)	Online (Freiburg University)

## Posters

2019	<b>Elastica in the hyperbolic plane</b> (LINK)
2020	<b>A biharmonic Bernoulli problem</b> (LINK)

# List of Teaching Experience

2012-2016	<b>Several jobs as Grader &amp; Tutor</b> Including tutorials for a total of 11 modules. Among those the 4-week University preparation course ‘Uni-Trainingscamp’ (LINK) and exam preparation tutorials (‘Repetitorien’).	Ulm University
2016	<b>Teaching Assistant Orientations</b> 4-week pedagogical training prior to US-teaching assistant positions	Syracuse University, USA
Fall 2016	<b>Teaching Assistant “Calculus 3”</b> Bachelor’s course, course instructor: Loredana Lanzani. Responsibilities: Tutorial sessions, grading of weekly quizzes and midterm exams.	Syracuse University, USA
Spring 2017	<b>Teaching Assistant “Calculus 2”</b> Bachelor’s course, course instructor: Jeff Meyer. Responsibilities: content and grading of weekly quizzes, grading of midterm exams, tutorial sessions.	Syracuse University, USA
Summer 2017	<b>Teaching Assistant “Elemente der Funktionalanalysis”</b> ( $\hat{=}$ Elementary Functional Analysis). Bachelor’s course, course Instructor: Jochen Glück. Responsibilities: content and solutions of exercise sheets and presentation thereof. (LINK)	Ulm University
Summer 2017	<b>Teaching Assistant “Elemente der Funktionentheorie”</b> ( $\hat{=}$ Elementary Complex Analysis). Bachelor’s course, course instructor: Friedmar Schulz. Responsibilities: content and solutions of exercise sheets and presentation thereof.	Ulm University
Winter 2017	<b>Teaching Assistant “Variationsrechnung”</b> ( $\hat{=}$ Calculus of Variations). Master’s course, course Instructor: Anna Dall’Acqua. Responsibilities: content and solutions of exercise sheets and presentation thereof.	Ulm University
Summer 2018	<b>Teaching Assistant “Elementare Differenzialgeometrie”</b> ( $\hat{=}$ Elementary Differential Geometry). Bachelor’s course, course instructor: Julian Scheuer. Responsibilities: solutions of exercise sheets and presentation thereof (LINK).	Ulm University
Winter 2019	<b>Teaching Assistant “Advanced Topics in the Calculus of Variations”</b> Master’s course, course instructors: Anna Dall’Acqua and Emil Wiedemann. Responsibilities: content and solutions of exercise sheets (LINK).	Ulm University
Summer 2020	<b>Teaching Assistant “Riemann’sche Geometrie”</b> ( $\hat{=}$ Riemannian Geometry). Master’s course, course Instructor: Anna Dall’Acqua. Responsibilities: content and solutions of exercise sheets, screencast video content.	Online (Ulm University)
Winter 2020	<b>Teaching Assistant “Analysis 3”</b> 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”	Online (Freiburg University)
Winter 2020	<b>Assistant for Student Seminar “Geometrie ebener Kurven”</b> ( $\hat{=}$ Geometry of plane curves). Master’s course, instructor: Ernst Kuwert. Responsibilities: support of students in preparation of their talks.	Online (Freiburg University)
Summer 2021	<b>Teaching Assistant “Elementare Differentialgeometrie”</b> ( $\hat{=}$ 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)	Online (Freiburg University)
Summer 2021	<b>Assistant for Student Seminar “Differentialformen”</b> ( $\hat{=}$ Differential forms). Master’s course, instructor: Ernst Kuwert. Responsibilities: Preparatory online lectures, support of students in preparation of their talks.	Online (Freiburg University)
Winter 2021	<b>Lecturer “Gewöhnliche Differentialgleichungen”</b> ( $\hat{=}$ Ordinary Differential Equations). Bachelor’s course. Responsibilities: Course instructor – content of lectures and exercises. (LINK)	Freiburg University and Online
Summer 2022	<b>Teaching Assistant “Kurven und Flächen”</b> ( $\hat{=}$ Curves and surfaces). Bachelor’s course, instructor: Christian Ketterer. Responsibilities: Exercise classes. (LINK)	Freiburg University
Summer 2022	<b>Assistant for Seminar “Analysis”</b> ( $\hat{=}$ Curves and surfaces). Bachelor’s course, instructor: Guofang Wang. Responsibilities: Support of students in preparation of their talks.	Freiburg University