





# Marius Müller

 June 14, 1993 in Engelskirchen, Germany

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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

 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.

 Currently: Math Club for high school students "Mathezirkel 10. Klasse" ([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  
( $\cong$  "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  $\cong$  "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*  
Accepted for publication in Amer. J. Math. [CLICK HERE TO VIEW PREPRINT](#)
- 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*  
Accepted for publication in Analysis & PDE. [CLICK HERE TO VIEW PREPRINT](#)
- 2023 **11. On elliptic equations involving surface measures**  
*M. Müller*  
Ann. Sc. Norm. Super. Pisa Cl. Sci. (ahead of print) 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](#))

2023

**15. Short closed geodesics and the Willmore energy**

*M. Müller, F. Rupp and C. Scharrer*

[CLICK HERE TO VIEW PREPRINT](#)

2024

**16. Classification and stability of penalized pinned elasticae**

*M. Müller and K. Yoshizawa*

[CLICK HERE TO VIEW PREPRINT](#)

# List of Talks/Posters/Workshops

## Talks

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

|         |   |          |
|---------|---|----------|
| 10/2024 | <b>Nonlinear Partial Differential Equations in Freiburg</b><br><i>Short closed geodesics and the Willmore energy</i> ( <a href="#">LINK</a> ) | Freiburg |
| 01/2025 | <b>Oberseminar Differentialgeometrie</b><br><i>Short closed geodesics and the Willmore energy</i> ( <a href="#">LINK</a> )                    | Münster  |

## Organized Workshops

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

## Posters

|      |  |
|------|--|
| 2019 | <b>Elastica in the hyperbolic plane</b> ( <a href="#">LINK</a> ) |
| 2020 | <b>A biharmonic Bernoulli problem</b> ( <a href="#">LINK</a> )   |

# List of Teaching Experience

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

## List of Teaching Experience – cont'd

|                       |   |                     |
|-----------------------|---|---------------------|
| Winter 2022           | <b>Course Instructor “Gewöhnliche Differentialgleichungen”</b><br>( $\hat{=}$ Ordinary Differential equations). Bachelor’s basic course.<br>Responsibilities: Course instructor — content of lectures and exercises ( <a href="#">LINK</a> )              | Leipzig University  |
| Winter 2022           | <b>Course Instructor “Seminar zur Schulmathematik – Ebene Kurven”</b><br>( $\hat{=}$ Seminar for math education students – geometry of planar curves). Seminar course.<br>Responsibilities: Preparing and assigning projects and supervision of students. | Leipzig University  |
| Summer 2023           | <b>Course Instructor “Funktionentheorie”</b><br>( $\hat{=}$ Complex Analysis). Bachelor’s basic course.<br>Responsibilities: Course instructor — content of lectures and exercises  | Leipzig University  |
| Summer 2023           | <b>Seminar Assistant “Mathematics and Climate”</b><br>Master’s course (in mathematical physics). Course instructor: Laszlo Szekelyhidi.<br>Responsibilities: Support of students in preparation of their seminar talks                                    | Leipzig University  |
| Winter 2023           | <b>Course Instructor “Analysis 1”</b><br>Bachelor’s basic course.<br>Responsibilities: Course instructor – content of lectures and exercises.   | Augsburg University |
| Winter 2023           | <b>Exercise group “Analysis 1”</b><br>Exercise class for bachelor’s basic course.<br>Responsibilities: Homework assignment, grading of exercises, sample solutions.   | Augsburg University |
| Winter 2023 - present | <b>Supervision “Offener Matheraum – Kernzeit Lehramt”</b><br>( $\hat{=}$ Homework aid center for math education students)<br>Responsibilities: Homework aid and individual support for math education students.   | Augsburg University |
| Winter 2023 - present | <b>Supervision “Betriebspraktikum Mathematik und Wirtschaftsmathematik”</b><br>( $\hat{=}$ Mandatory internship)<br>Responsibilities: Communication of job opportunities, review of internship reports.   | Augsburg University |
| Summer 2024           | <b>Course Instructor “Analysis 2”</b><br>Bachelor’s basic course.<br>Responsibilities: Course instructor – content of lectures and exercises.   | Augsburg University |
| Summer 2024           | <b>Exercise group “Analysis 2”</b><br>Exercise class for bachelor’s basic course.<br>Responsibilities: Homework assignment, grading of exercises, sample solutions.   | Augsburg University |
| Winter 2024           | <b>Course Instructor “Analysis 3”</b><br>Bachelor’s basic course.<br>Responsibilities: Course instructor – content of lectures and exercises.   | Augsburg University |
| Winter 2024           | <b>Exercise group “Analysis 3”</b><br>Exercise class for bachelor’s basic course.<br>Responsibilities: Homework assignment, sample solutions.   | Augsburg University |