

Mathematical Institute
LMU Munich
Theresienstraße 39
80333 Munich – Germany

☎ [+49] 089 2180 4421

✉ Breit@math.lmu.de

🌐 www.math.lmu.de/breit/

Dominic Breit

Curriculum vitae

Personal Information

Date of Birth **September 6, 1983.**
Place of Birth **Saarbrücken, Germany.**
Nationality **German.**

Education

11/2009– **Habilitation in Mathematics**, *thesis submitted at LMU Munich, 07/2013.*
"Existence theory for generalized Newtonian fluids"
Referees: Diening, Frehse (University of Bonn),
Malèk (Charles University, Prague), Süli (University of Oxford)

10/2007–10/2009 **PhD study in Mathematics**, *Saarland University, with distinction.*
"New regularity theorems for anisotropic variational integrals"
Referees: Bildhauer, Fuchs, Ural'tseva (St. Petersburg State University)

10/2003–07/2008 **Diploma study in Business Administration**, *Saarland University.*
"Estimating time continuous models in financial econometrics by EMM and GMM"

10/2003–09/2007 **Diploma study in Mathematics**, *Saarland University.*
"Regularity analysis for the Ramberg-Osgood model in three dimensions"
Referees: Bildhauer, Fuchs

06/2003 **School leaving**, *Theodor-Heuss-Gymnasium, Sulzbach.*

Employment

10/2013–04/2014 **Ludwig-Maximilians-University Munich.**
Substitute of a chair at Mathematical Institute

10/2012–10/2013 **University of Florence.**
Research fellow at Department of Mathematics "Ulisse Dini"

10/2011–10/2012 **Ludwig-Maximilians-University Munich.**
Assistant lecturer at Mathematical Institute

04/2011–10/2011 **University of Oxford.**
Research fellow at Oxford Centre for Nonlinear PDE

10/2009–04/2011 **Saarland University.**
Assistant lecturer at Department of Mathematics

10/2005–10/2009 **Saarland University.**
(Student) research assistant at Department of Mathematics

Awards/Grants

- 10/2012–10/2013 **Postdoc fellowship.**
Leopoldina (German National Academy of Science)
- 10/2011 **Dr. Eduard-Martin-Price 2011.**
Best PhD thesis of the Faculty for Mathematics and Computer Science at Saarland University
- 04/2011–10/2011 **Postdoc fellowship.**
Alexander von Humboldt foundation
- 07/2009 **Best-Diploma Award.**
Department of Economics at Saarland University
- 10/2008–10/2009 **PhD fellowship.**
Landesgraduierertenförderung of Saarland

Research stays

- 10/2012–10/2013 **Florence–Italy**, *Department of Mathematics "Ulisse Dini"*.
1 year, hosted by A. Cianchi
- 02/2012–03/2012 **Lund–Sweden**, *Mathematical Institute*.
1 month, hosted by Erik Wahlén
- 04/2011–10/2011 **Oxford–United Kingdom**, *Oxford Centre for Nonlinear PDE*.
6 month, hosted by G. Seregin
- 09/2010–10/2010 **Naples–Italy**, *Department of Mathematics "Renato Caccioppoli"*.
1 month, hosted by N. Fusco
- 02/2010–04/2010 **Naples–Italy**, *Department of Mathematics "Renato Caccioppoli"*.
2 month, hosted by N. Fusco
- 09/2009 **Bonn–Germany**, *Hausdorff Center for Mathematics*.
3 weeks, hosted by J. Frehse

Research interests

The focus of my research is the existence and regularity theory for nonlinear elliptic and parabolic PDE's. Especially, I am interested in:

- **Generalized Newtonian fluids** (p -Navier Stokes equations)
- **Calculus of variations** (regularity theory, non-standard growth)
- **Nonlinear water waves** (existence and stability)
- **Stochastic PDE's** (nonlinear parabolic systems)
- **Numerical analysis** (a priori and a posteriori estimates)

Selected publications

- o D. Breit, L. Diening and S. Schwarzacher: "Solenoidal Lipschitz truncation for parabolic PDE's." To appear in **Math. Mod. Meth. Appl. Sciences**. DOI: 10.1142/S0218202513500437 (2013)
- o D. Breit: "Analysis of generalized Navier-Stokes equations for stationary shear thickening flows." **Nonlinear Analysis TMA** 75, 5549–5560. (2012)
- o D. Breit, L. Diening and M. Fuchs: "Solenoidal Lipschitz truncation and applications in fluid mechanics." **J. Diff. Eq.** 253, 1910–1942. (2012)
- o D. Breit: "New regularity theorems for non-autonomous variational integrals with (p, q) -growth." **Calc. Var.** 44, 101–129. (2012)
- o D. Breit, B. Stroffolini, A. Verde: "A general regularity theorem for functionals with φ -growth." **J. Math. Anal. Appl.** 383, 226–233. (2011)

Teaching

- Winter 2013/2014 **LMU Munich.**
"Numerics I" (lecture, 6 CP)
"Sobolev spaces" (lecture, 3 CP)
"Numerical Analysis" (seminar, jointly with L. Diening, 3 CP)
"Analysis of partial differential equations" (seminar, jointly with L. Diening, 3 CP)
- Summer 2013 **University of Florence.**
"Function spaces" (PhD lecture)
- Summer 2012 **LMU Munich.**
"Mathematics for Nature Science II" (lecture & tutorials, 6 CP)
"Parabolic differential equations" (seminar, jointly with L. Diening, 3 CP)
"Analysis of partial differential equations" (seminar, jointly with L. Diening, 3 CP)
- Winter 2011/2012 **LMU Munich.**
"Mathematics for Nature Science I" (lecture & tutorials, 6 CP)
"Numerical Analysis" (seminar, jointly with L. Diening, 3 CP)
"Analysis of partial differential equations" (seminar, jointly with L. Diening, 3 CP)
- Winter 2010/2011 **Saarland University.**
"Preliminaries in mathematical fluid mechanics" (lecture & tutorials, 4.5 CP)
- Summer 2010 **Saarland University.**
"Sobolev spaces" (lecture & tutorials, 4.5 CP)
- Winter 2010/2011 **Saarland University.**
"Preliminaries in the calculus of variations" (lecture & tutorials, 4.5 CP)

Supervised students

- in progress **A. Schmidt, Diploma thesis.**
"Numerical Analysis of generalized Newtonian fluids"
- 10/2013 **F. X. Gmeineder, Master's thesis.**
"Approximation and Extension Theorems for functions in BV and BD"
- 08/2012 **H. Brackmann, Bachelor's thesis.**
"The Finite Element Method to Price American Options in the Heston Model"

05/2012 **F. X. Gmeineder**, *Bachelor's thesis*.

"Functions of bounded variation on euclidean domains and related problems in variational calculus"

References

- Prof. Dr. Andrea Cianchi
University of Florence, Department of Mathematics "Ulisse Dini"
Viale Morgagni 67/a, 50134 Florence, Italy
cianchi@unifi.it
- Prof. Dr. Jens Frehse
University of Bonn, Department of Applied Mathematics
Endenicher Alle 60, 53115 Bonn, Germany
erdbeere@iam.uni-bonn.de
- Prof. Dr. Martin Fuchs
Saarland University, Department of Mathematics
P.O. Box 15 11 50, 66041 Saarbrücken, Germany
fuchs@math.uni-sb.de
- Prof. Dr. Jan Kristensen
Mathematical Institute, University of Oxford
24-29 St. Giles', Oxford OX1 3LB, United Kingdom
Jan.Kristensen@maths.ox.ac.uk