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List of publications

Theses

1) *Regularitätsuntersuchungen für das Ramberg/Osgood–Modell in drei Dimensionen.* **Diploma thesis**, Saarland University, Department of Mathematics. (2007; M. Fuchs, M. Bildhauer)

2) *Schätzung zeitstetiger Modelle in der Finanzmarktökonometrie mittels EMM und GMM.* **Diploma thesis**, Saarland University, Department of Economics. (2008)

3) *Regularitätssätze für Variationsprobleme mit ansiotropen Wachstumsbedingungen.* **PhD thesis**, Saarland University, Department of Mathematics. (2009; M. Fuchs, M. Bildhauer, N. Ural'tseva)

4) *Existence theory for generalized Newtonian fluids.* **Habilitation thesis**, LMU Munich, Mathematical Institute. (2013; L. Diening, J. Frehse, J. Málek, E. Süli)

Books

1) D. Breit: *Existence theory for generalized Newtonian fluids.* Mathematics in Science and Engineering. Elsevier/Academic Press, London, 286 pp. (2017)

2) D. Breit, E. Feireisl & M. Hofmanová: *Stochastically forced compressible fluid flows.* De Gruyter Series in Applied and Numerical Mathematics. De Gruyter, Berlin/Munich/Boston, 344 pp. (2018)

3) D. Breit & F. Gmeineder: *A course on function spaces.* To appear in Springer Universitext.

Articles in peer-reviewed journals

1) D. Breit: *The partial regularity for minimizers of splitting type variational integrals under general growth conditions I. The autonomous case.* **J. Math. Sciences** 166, No. 3, 239–258. (2010)

2) D. Breit: *The partial regularity for minimizers of splitting type variational integrals under general growth conditions II. The nonautonomous case.* **J. Math. Sciences** 166, No. 3, 259–281. (2010)

3) D. Breit: *A note on splitting-type variational problems with subquadratic growth.* **Arch. Math.** 94, 467–476. (2010)

4) D. Breit & M. Fuchs: *The nonlinear Stokes problem with general potentials having superquadratic growth.* **J. Math. Fluid Mech.** 13, 371–385. (2011)

5) D. Breit: *Splitting-type variational problems with x-dependent exponents.* **Ann. Acad. Sci. Fenn. Math.** 36, 279–289. (2011)

6) D. Breit, B. De Maria & A. Passarelli di Napoli: *Regularity for nonautonomous functionals with almost linear growth.* **Manus. Math.** 136, 83–114. (2011)

7) D. Breit, B. Stroffolini & A. Verde: *A general regularity theorem for functionals with φ-growth.* **J. Math. Anal. Appl.** 383, 226–233. (2011)

8) D. Breit: *New regularity theorems for non-autonomous variational integrals with (p,q)-growth.* **Calc. Var. & PDE** 44, 101–129. (2012)

9) D. Breit: *Regularity theory for superquadratic energy functionals related to nonlinear Hencky materials in three dimensions.* **J. Appl. Anal.** 18, 1–31. (2012)

10) D. Breit: *Analysis of generalized Navier-Stokes equations for stationary shear thickening flows.* **Nonlinear Anal.– Ser. A** 75, 5549–5560. (2012)

11) D. Breit, L. Diening & M. Fuchs: *Solenoidal Lipschitz truncation and applications in fluid mechanics.* **J. Diff. Eq.** 253, 1910–1942. (2012)

12) D. Breit & O. D. Schirra: *Korn-type inequalities in Orlicz-Sobolev spaces involving the trace-free part of the symmetric gradient and applications to regularity theory.* **J. Anal. Appl. (ZAA)** 31, 335–356. (2012)

13) D. Breit & L. Diening: *Sharp conditions for Korn inequalities in Orlicz spaces.* **J. Math. Fluid Mech.** 14, 565–573. (2012)

14) D. Breit & A. Verde: *Quasiconvex variational integrals in Orlicz-Sobolev spaces.* **Ann. Mat. Pura Appl.** 192, 255–271. (2013)

15) D. Breit, L. Diening & S. Schwarzacher: *Solenoidal Lipschitz truncation for parabolic PDEs.* **Math. Mod. Meth. Appl. Sci.** 23, 2671–2700. (2013)

16) D. Breit: *Smoothness properties of solutions to the nonlinear Stokes problem with non-autonomous potentials.* **Comment. Math. Univ. Carolin.** 54, 493–508. (2013)

17) D. Breit: *Regularity theory for nonlinear systems of SPDEs.* **Manus. Math.** 146, 329–349. (2015)

18) D. Breit, L. Diening & S. Schwarzacher: *Finite Element Approximation of the $p(\cdot)$-Laplacian.* **SIAM J. Numer. Anal.** 53, 551–572. (2015)

19) D. Breit & A. Cianchi: *Negative Orlicz-Sobolev norms and strongly nonlinear systems in fluid mechanics.* **J. Diff. Eq.** 259, 48–83. (2015)

20) D. Breit: *Existence theory for stochastic power law fluids.* **J. Math. Fluid Mech.** 17, 295–326. (2015)

21) L. C. Berselli, D. Breit & L. Diening: *Convergence Analysis for a Finite Element Approximation of a Steady Model for Electrorheological Fluids.* **Numer. Math.** 132, 657–689. (2016)

22) A. Bensoussan, D. Breit & J. Frehse: *Parabolic Bellman-systems with mean field dependence.* **Appl. Math. Optim.** 73, 419–432. (2016)
(Special issue in memory of A. V. Balakrishnan)

23) D. Breit: *The $\mathcal{A}$-Stokes approximation for non-stationary problems.* **Quart. J. Math.** 67, 201–231. (2016)

24) D. Breit & M. Hofmanová: *Stochastic Navier–Stokes equations for compressible fluids.* **Indiana Univ. Math. J.** 65, 1183–1250. (2016)

25) D. Breit, E. Feireisl & M. Hofmanová: *Incompressible limit for compressible fluids with stochastic forcing.* **Arch. Rational Mech. Anal.** 222, 895–926. (2016)

26) H. Abels & D. Breit: *Weak solutions for a non-Newtonian diffuse interface model with different densities.* **Nonlinearity** 29, 3426–3453. (2016)

27) D. Breit, E. Feireisl & M. Hofmanová: *Compressible fluids driven by stochastic forcing: The relative energy inequality and applications.* **Commun. Math. Phys.** 350, 443–473. (2017)

28) D. Breit, A. Cianchi & L. Diening: *Trace-free Korn inequalities in Orlicz spaces.* **SIAM J. Math. Anal.** 49, 2496–2526. (2017)

29) D. Breit, B. Stroffolini & A. Verde: *Non-stationary flows of asymptotically Newtonian fluids.* **Commun. Contemp. Math.** 20, 1750006. (2018)

30) D. Breit, E. Feireisl & M. Hofmanová: *Local strong solutions to the stochastic compressible Navier–Stokes system.* **Commun. PDE** 43, 313–345. (2018)

31) D. Breit & S. Schwarzacher: *Compressible fluids interacting with a linear-elastic shell.* **Arch. Rational Mech. Anal.** 228, 495–562. (2018)

32) A. Bensoussan, D. Breit & J. Frehse: *Parabolic Bellmann equations with risk control.* **SIAM J. Control Optim.** 56, 1535–1549. (2018)

33) D. Breit, A. Cianchi, L. Diening, T. Kuusi & S. Schwarzacher: *Pointwise Calderón-Zygmund gradient estimates for the p-Laplace system.* **J. Math. Pures Appl.** 114, 146–190. (2018)

34) D. Breit & P. R. Mensah: *Stochastic compressible Euler equations and inviscid limits.* **Nonlinear Anal.– Ser. A** 184, 218–238. (2019)

35) D. Breit, E. Feireisl, M. Hofmanová & B. Maslowski: *Stationary solutions to the compressible Navier–Stokes system driven by stochastic forces.* **Probab. Theory Relat. Fields** 174, 981–1032. (2019)

36) D. Breit & F. Gmeineder: *Electro-rheological fluids under random influences: martingale and strong solutions.* **Stoch. PDE: Anal. Comp.** 7, 699–745. (2019)

37) D. Breit & E. Wahlén: *A variational approach to solitary gravity-capillary interfacial waves with infinite depth.* **J. Nonlinear Sci.** 29, 2601–2655. (2019)

38) D. Breit, E. Feireisl & M. Hofmanová: *Solution semiflow for the isentropic Euler system.* **Arch. Rational Mech. Anal.** 235, 167–194. (2020)

39) D. Breit, E. Feireisl & M. Hofmanová: *On solvability and ill-posedness of the compressible Euler system subject to stochastic forces.* **Anal. PDE** 13, 371–402. (2020)

40) D. Breit, L. Diening & F. Gmeineder: *On the trace operator for functions of bounded $\mathbb{A}$-variation.* **Anal. PDE** 13, 559–594. (2020)

41) D. Breit & E. Feireisl: *Stochastic Navier–Stokes–Fourier equations.* **Indiana Univ. Math. J.** 69, 911–975. (2020)

42) D. Breit, E. Feireisl & M. Hofmanová: *Dissipative solutions and semiflow selection for the complete Euler system.* **Commun. Math. Phys.** 376, 1471–1497. (2020)

43) D. Breit & P. R. Mensah: *Space-time approximation of parabolic systems with variable growth.* **IMA J. Num. Anal.** 40, 2505–2552. (2020)

44) D. Breit, E. Feireisl & M. Hofmanová: *Markov selection for the stochastic compressible Navier–Stokes system.* **Ann. Appl. Probab.** 30, 2547–2572. (2020)

45) D. Breit & P. R. Mensah: *An incompressible polymer fluid interacting with a Koiter shell.* **J. Nonlinear Sci.** 31, 25. (2021)

46) D. Breit & A. Dodgson: *Convergence rates for the numerical approximation of the 2D stochastic Navier–Stokes equations.* **Numer. Math.** 147, 553–578. (2021)

47) D. Breit & P. R. Mensah: *Local well-posedness of the compressible FENE dumbbell model of Warner-type.* **Nonlinearity** 34, 2715–2749. (2021)

48) D. Breit & T. C. Moyo: *Dissipative solutions to the stochastic Euler equations.* **J. Math. Fluid Mech.** 23, 80. (2021)

49) D. Breit, L. Diening, J. Storn & J. Wichmann: *The parabolic p-Laplacian with fractional differentiability.* **IMA J. Num. Anal.** 41, 2110–2138. (2021)

50) D. Breit, M. Hofmanová & S. Loisel: *Space-time approximation of stochastic p-Laplace systems.* **SIAM J. Num. Anal.** 59, 2218–2236. (2021)

51) D. Breit & A. Cianchi: *Symmetric gradient Sobolev spaces endowed with rearrangement invariant norms.* **Adv. Math.** 391, 107954. (2021)

52) D. Breit, L. Diening & F. Gmeineder: *The Lipschitz truncation of functions of bounded variation.* **Indiana Univ. Math. J.** 70, 2237–2260. (2021)

53) D. Breit, A. Cianchi, L. Diening & S. Schwarzacher: *Global Schauder estimates for the p-Laplace system.* **Arch. Rational Mech. Anal.** 243, 201–255. (2022)

54) D. Breit, E. Feireisl, M. Hofmanová & E. Zatorska: *Compressible Navier–Stokes system with transport noise.* **SIAM J. Math. Anal.** 54, 4465–4494. (2022)

55) D. Breit, E. Feireisl & M. Hofmanová: *Stationary solutions in thermodynamics of stochastically forced fluids.* **Math. Ann.** 384, 1127–1155. (2022)

56) D. Breit & A. Prohl: *Numerical analysis of 2D Navier–Stokes equations with additive stochastic forcing.* **IMA J. Num. Anal.** 43, 1391–1421. (2023)

57) D. Breit & S. Schwarzacher: *Navier–Stokes–Fourier fluids interacting with elastic shells.* **Ann. Sc. Norm. Super. Pisa Cl. Sci. (5)** XXIV, 619–690. (2023)

Articles accepted for publication in peer-reviewed journals

58) D. Breit: *Regularity results in 2D fluid-structure interaction.* **Math. Ann.** DOI:10.1007/s00208-022-02548-9

59) D. Breit & A. Prohl: *Error analysis for 2D stochastic Navier–Stokes equations in bounded domains with Dirichlet data.* **Found. Comp. Math.** DOI: 10.1007/s10208-023-09621-y

60) D. Breit & A. Dodgson: *Space-time approximation of local strong solutions to the 3D stochastic Navier–Stokes equations.* **Comp. Meth. Appl. Math.** DOI:10.1515/cmam-2023-0052

61) D. Breit & A. Prohl: *Weak error analysis for the stochastic Allen–Cahn equation.* To appear in **Stoch. PDE: Anal. Comp.** Preprint at arXiv:2210.02051v1

62) D. Breit, E. Feireisl & M. Hofmanová: *On the long time behavior of compressible fluid flows excited by random forcing.* To appear in **Ann. Inst. H. Poincaré C Anal. Non Linéaire** Preprint at arXiv:2012.07476v1

63) D. Breit, P. R. Mensah & T. C. Moyo: *Martingale solutions in stochastic fluid-structure interaction.* To appear in **J. Nonlinear Sci.** Preprint at arXiv:2310.08519

64) D. Breit: *A Schauder theory for the Stokes equations in rough domains.* To appear in **Indiana Univ. Math. J.** Preprint at arXiv:2304.06311v1

Articles submitted for publication

65) D. Breit & A. Cianchi: *Inclusion relations among fractional Orlicz-Sobolev spaces and a Littlewood-Paley characterization.* Preprint at arXiv:2302.10839v3

66) D. Breit, M. Kampschulte & S. Schwarzacher: *Compressible fluids interacting with 3D visco-elastic bulk solids.* Preprint at arXiv:2108.03042v1

67) D. Breit: *Partial boundary regularity for the Navier–Stokes equations in irregular domains.* Preprint at arXiv:2208.00415v2

68) D. Breit: *Partial boundary regularity for the Navier–Stokes equations in time-dependent domains.* Preprint at arXiv:2305.02602

69) D. Breit, T. C. Moyo & A. Prohl: *Mean Square Temporal error estimates for the 2D stochastic Navier–Stokes equations with transport noise.* Preprint at arXiv:2305.10999

70) D. Breit, P. R. Mensah, S. Schwarzacher & P. Su: *Ladyzhenskaya-Prodi-Serrin condition for fluid-structure interaction systems.* Prepint at arXiv:2307.12273

71) D. Breit & P. R. Mensah: *Existence of a local strong solution to the beam-polymeric fluid interaction system.* Prepint at arXiv:2308.04809

Surveys, announcements & proceedings

1) D. Breit & M. Hofmanová: *On time regularity of stochastic evolution equations with monotone coefficients.* **C. R. Acad. Sci. Paris Ser. I** 354, 33–37. (2016)

2) D. Breit: *Existence theory for generalized Newtonian fluids.* in Recent Advances in Partial Differential Equations and Applications, **Cont. Math.** 666, Amer. Math. Soc., Providence, RI, 99–110. (2016)

3) D. Breit, A. Cianchi, L. Diening, T. Kuusi & S. Schwarzacher: *The p-Laplace system with right-hand side in divergence form: Inner and up to the boundary pointwise estimates.* **Nonlinear Anal.– Ser. A** 153, 200–212. (2017)
(Special issue for N. Fusco's 60th birthday)

4) D. Breit: *An Introduction to Stochastic Navier–Stokes Equations.* In: M. Bulíček, E. Feireisl, M. Pokorný (eds) **New Trends and Results in Mathematical Description of Fluid Flows.** Nečas Center Series. Birkhäuser, Cham. (2018)

5) D. Breit, E. Feireisl & M. Hofmanová: *Generalized solutions to models of inviscid fluids.* **Discr. Cont. Dyn. Systems Ser. B** 25, 3831–3842. (2020)

6) L. C. Berselli & D. Breit: *On the existence of weak solutions for the steady Baldwin-Lomax model and generalizations.* **J. Math. Anal. Appl.** 501, 124633. (2021)

Selected talks

1) Studierenden-Konferenz, DMV-Tagung, **Erlangen–Germany**. (09/2008)

2) Hausdorff Centre for Mathematics, **Bonn–Germany**. (09/2009)

3) Department of Mathematics "R. Caccioppoli", **Naples–Italy**. (03/2010)

4) Singular days on Asymptotic Methods for PDEs, **Berlin–Germany**. (04/2010)

5) Dynamical Systems, Differential Equ. & Appl., **Dresden–Germany**. (05/2010)

6) Ludwig-Maximilian-University, **Munich–Germany**. (11/2010)

7) British Applied Mathematics Colloquium, **Birmingham–UK**. (04/2011)

8) Oxford Centre for Nonlinear PDE, **Oxford–UK**. (05/2011)

9) IMA Conference: Nonlinearity & Coherent Structures, **Reading–UK**. (07/2011)

10) Equadiff 2011, **Loughborough–UK**. (08/2011)

11) University of Lund, **Lund–Sweden**. (02/2012)

12) Charles University, **Prague–Czech Republic**. (05/2012)

13) Department of Mathematics "U. Dini", **Florence–Italy**. (11/2012)

14) Department of Applied Mathematics "U. Dini", **Pisa–Italy**. (11/2012)

15) University of Parma, **Parma–Italy**. (03/2013)

16) Waves and Stability in Continuous Media, **Levico Terme–Italy**. (06/2013)

17) CIME-EMS Summer School in applied mathematics, **Cetraro–Italy**. (07/2013)

18) University of Regensburg, **Regensburg–Germany**. (01/2014)

19) Recent Advances in PDEs and Applications, **Levico Terme–Italy**. (02/2014)

21) Leopoldina Jahrestagung, **Halle (Saale)–Germany**. (02/2014)

22) Austrian Numerical Analysis Days, **Vienna–Austria**. (05/2014)

23) European Finite Element Fair, **Vienna–Austria**. (05/2014)

24) Academy of Science, **Prague–Czech Republic**. (09/2014)

25) University of Surrey, **Guildford–UK**. (02/2015)

26) Duisburg-Essen University, **Essen–Germany**. (06/2015)

27) Equadiff 2015, **Lyon–France**. (07/2015)

28) University of Cologne, **Cologne–Germany**. (07/2015)

29) University of Osnabrück, **Osnabrück–Germany**. (07/2015)

30) Technical University, **Berlin–Germany**. (08/2015)

31) Eberhard Karls University, **Tübingen–Germany**. (04/2016)

32) Maxwell Institute Probability Day, **Edinburgh–UK**. (05/2016)

33) 9th Eur. Conference on Elliptic and Parabolic Problems, **Gaeta–Italy**. (05/2016)

34) Ruhr University, **Bochum–Germany**. (06/2016)

35) 4th Scottish PDE Colloquium, **Dundee–UK**. (06/2016)

36) University of York, **York–UK**. (01/2017)

37) University of Bielefeld, **Bielefeld–Germany**. (05/2017)

38) Equadiff 2017, **Bratislava–Slovakia**. (07/2017)

39) University of Strathclyde, **Glasgow–UK**. (11/2018)

40) Workshop on Fluid-Structure Interaction, **Milan–Italy**. (03/2019)

41) North-British Probability Seminar, **Edinburgh–UK**. (10/2019)

42) Monday's Nonstandard Seminar (online), **Warsau–Poland**. (01/2021)

43) Charles University (online), **Prague–Czech Republic**. (01/2021)

44) Nonlinear Potential Theoretic Methods in Partial Differential Equations (online), **Banff–Canada**. (09/2021)

45) University of Leipzig (online), **Leipzig–Germany**. (11/2021)

46) SIAM PDE (online), **Berlin–Germany**. (03/2022)

47) Analysis of Fluid and Elastic Body Interactions, **Regensburg–Germany**. (04/2022)

48) Heinrich-Heine University, **Dusseldorf–Germany**. (05/2022)

49) Free and Singular Boundaries in Fluid Dynamics and Related Topics, **Dusseldorf–Germany**. (08/2022)

50) Numerics and analysis of (stochastic) fluids, **Bielefeld–Germany**. (08/2022)

51) Geometric and functional inequalities, function spaces and PDEs, **Prague–Czech Republic**. (02/2023)

52) Nonlinear Analysis online seminar, **National Taiwan Normal University**. (03/2023)

53) **TU Dortmund–Germany**. (06/2023)

54) ICIAM (hybrid) **Tokyo-Japan**. (08/2023)