

Florian Oschmann

Curriculum Vitae

Personal data

First name Florian
Family name Oschmann
Date of birth 19.03.1995
Place of birth Friedrichroda, Germany
Nationality German
Email oschmann@math.cas.cz
Homepage http://www.math.cas.cz/homepage/main_page.php?id_membre=4080

Education

since 07/2022 **Postdoctoral fellow**, *Akademie Věd České Republiky, Praha*
Department of Evolutionary Differential Equations; Head of group: Šárka Nečasová
2018–2022 **Ph.D. in Mathematics**, *TU Dortmund, Dortmund*
Title of PhD thesis: Homogenization of compressible fluids in perforated domains;
Supervisor: Prof. Dr. Peter Bella, *Final grade: magna cum laude (very good)*
2017–2019 **B.Sc. in Physics**, *Universität Leipzig, Leipzig, Final grade: 1.6*
2013–2018 **Graduate Mathematician (Diplom-Mathematiker)**, *Universität Leipzig, Leipzig, Final grade: 1.2*
Title of Diploma thesis: Über die Joukowski-Abbildung und ihre Anwendungen in der Aerostatik;
Supervisor: Prof. Dr. Hans-Peter Gittel
2005–2013 **High School Diploma (Abitur)**, *Perthes-Gymnasium, Friedrichroda, Germany, Final grade: 1.1*

Research

Research interests

partial differential equations, homogenization of Navier–Stokes and Navier–Stokes–Fourier equations, singular limits, fluid–structure interaction, collision problems

Preprints and Publications

- Homogenization of the two-dimensional evolutionary compressible Navier-Stokes equations (2022)**
Šárka Nečasová and Florian Oschmann; submitted to “Calculus of Variations and Partial Differential Equations”; <https://arxiv.org/abs/2210.09070>
- A short comment on two questions of Kuznetsov (2022)**
Florian Oschmann; submitted to “Examples and Counterexamples”; <https://arxiv.org/abs/2209.11074>
- Collision of a solid body with its container in a 3D compressible viscous fluid (2022)**

Bumja Jin, Šárka Nečasová, Florian Oschmann, Arnab Roy; submitted to “Proceedings of the American Mathematical Society”; <https://arxiv.org/abs/2210.04698>

4. **Rigorous derivation of the Oberbeck-Boussinesq approximation revealing unexpected term (2022)**

Peter Bella, Eduard Feireisl, Florian Oschmann; submitted to “Communications in Mathematical Physics”; http://www.math.cas.cz/fichier/preprints/IM_20220721120958_85.pdf

5. **Homogenization of compressible fluids in perforated domains (2022)**

Florian Oschmann (PhD thesis) <http://dx.doi.org/10.17877/DE290R-22795>

6. **Homogenization and low Mach number limit of compressible Navier-Stokes equations in critically perforated domains (2022)**

Peter Bella, Florian Oschmann; published in “Journal of Mathematical Fluid Mechanics” <https://doi.org/10.1007/s00021-022-00707-1>

7. **Homogenization of the full compressible Navier-Stokes-Fourier system in randomly perforated domains (2022)**

Florian Oschmann; published in “Journal of Mathematical Fluid Mechanics” <https://doi.org/10.1007/s00021-022-00679-2>

8. **Inverse of divergence and homogenization of compressible Navier-Stokes equations in randomly perforated domains (2021)**

Peter Bella, Florian Oschmann; minor revisions in “Archive for Rational Mechanics and Analysis”; <https://arxiv.org/abs/2103.04323>

Teaching Experience

Summer 2022 **Tutor of exercise classes for Bachelor students**, TU Dortmund
Analysis II

Winter 2021/2022 **Masterseminar**, *Homogenization of compressible Navier–Stokes–Fourier equations*, TU Dortmund
Lecturer: Prof. Dr. Peter Bella

2020–2022 **Tutor and organization of exercise classes for Analysis I-III**, TU Dortmund
Lecturer: Prof. Dr. Peter Bella

2019–2020 **Tutor of exercise classes for Bachelor students**, TU Dortmund
Analysis II (Summer 2020)
Analysis I (Winter 2019/2020)

2016–2019 **Tutor of exercise classes for Diploma and Bachelor students**, Universität Leipzig
Mathematik 4 für Physiker (english) (Summer 2019)
Mathematik 3 für Physiker (english) (Winter 2018/2019)
Gewöhnliche Differentialgleichungen LA Gymnasien (Summer 2018)
Analysis für Lehramt Grund- und Oberschule (Winter 2017/2018)
Mathematik für Wirtschaftswissenschaftler 2 (Summer 2017)
Gewöhnliche Differentialgleichungen (Winter 2016/2017)

Participation in workshops and conferences

30.05.–02.06.2023 GAMM23 (Dresden, Germany)

18.10.–22.10.2022 Against the flow (Będlewo, Poland)

22.08.–26.08.2022 Mathematical Fluid Mechanics In 2022 (Prague, Czech republic)

- 11.07.–15.07.2022 Equadiff 15 (Brno, Czech republic)
- 23.08.–27.08.2021 Summer School “Fluids under Control” (Prague, Czech republic; online)
- 22.02.–26.02.2021 Winterschool on Analysis and Applied Mathematics (Münster, Germany; online)
- 15.02.–19.02.2021 Multi-scale Analysis: Thematic Lectures and Meeting (Bengaluru, India; online)
- 2020–present One World PDE Seminar (Bath, UK; online)
- 17.06.–21.06.2019 Progress in Mathematical Fluid Dynamics (Cetraro, Italy)
- 10.06.–14.06.2019 International Conference on Fluids and Variational Methods (Budapest, Hungary)
- 03.06.–06.06.2019 Material theories, statistical mechanics, and geometric analysis: A conference in honor of Stephan Luckhaus’ 66th birthday (Leipzig, Germany)

Research visits

- 16.01.–20.01.2023 **WIAS Berlin**, together with Thomas Eiter and Martin Heida
- 07.11.–11.11.2022 **IMJ-PRG, Université de Paris**, together with Richard Höfer and David Gérard-Varet
- 06.09.–09.09.2021 **Czech Academy of Sciences, Prague**, together with Peter Bella and Eduard Feireisl

Talks and posters

- May/June 2023 **tba**, *GAMM23*, Dresden
Talk
- 18.01.2023 **tba**, *Langenbach-Seminar*, WIAS Berlin, Berlin
Talk
- 09.11.2022 **An unexpected term for the Oberbeck–Boussinesq approximation**, *Séminaire EDP*, Université de Paris, Paris
Talk
- 19.10.2022 **Results on (no) collision of a falling solid in a compressible fluid**, *Against the flow*, Polish Academy of Sciences / Będlewo conference center, Będlewo
Talk
- 25.08.2022 **Homogenization of compressible fluids in porous media**, *MFM-IN 2022*, Czech Academy of Sciences, Prague
Talk
- 11.07.–15.07.2022 **Homogenization of compressible NSE in randomly punctured domains**, *Equadiff 15*, Masaryk university, Brno
Poster
- 08.09.2021 **Inverse of divergence and homogenization of compressible Navier-Stokes equations in randomly perforated domains**, *Seminar on partial differential equations*, Czech Academy of Sciences, Prague
Talk

Languages

- German native
- English fluently
- Czech basics

Prague, October 24, 2022