

# Florian Oschmann

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## Curriculum Vitae

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### Personal data

First name Florian  
Family name Oschmann  
Date of birth 19.03.1995  
Place of birth Friedrichroda, Germany  
Nationality German  
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### 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*

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### 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

- On the incompressible limit of a strongly stratified heat conducting fluid (2022)**  
Danica Basarić, Peter Bella, Eduard Feireisl, Florian Oschmann, and Edriss S. Titi; submitted to “Journal of Mathematical Fluid Mechanics” [http://www.math.cas.cz/fichier/preprints/IM\\_20221220094335\\_32.pdf](http://www.math.cas.cz/fichier/preprints/IM_20221220094335_32.pdf)
- $\Gamma$ -convergence for nearly incompressible fluids (2022)**  
Peter Bella, Eduard Feireisl, and Florian Oschmann; submitted to “Journal of Mathematical Physics” [http://www.math.cas.cz/fichier/preprints/IM\\_20221213174627\\_54.pdf](http://www.math.cas.cz/fichier/preprints/IM_20221213174627_54.pdf)
- Homogenization of the two-dimensional evolutionary compressible Navier-Stokes equa-**

## tions (2022)

Šárka Nečasová and Florian Oschmann; submitted to “Calculus of Variations and Partial Differential Equations”; <https://arxiv.org/abs/2210.09070>

4. **A short comment on two questions of Kuznetsov (2022)**  
Florian Oschmann; submitted to “Examples and Counterexamples”; <https://arxiv.org/abs/2209.11074>
5. **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>
6. **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](http://www.math.cas.cz/fichier/preprints/IM_20220721120958_85.pdf)
7. **Homogenization of compressible fluids in perforated domains (2022)**  
Florian Oschmann (PhD thesis) <http://dx.doi.org/10.17877/DE290R-22795>
8. **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>
9. **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>
10. **Inverse of divergence and homogenization of compressible Navier-Stokes equations in randomly perforated domains (2021)**  
Peter Bella, Florian Oschmann; accepted in “Archive for Rational Mechanics and Analysis”; <https://arxiv.org/abs/2103.04323>

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## Teaching Experience

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| Summer 2022      | <b>Tutor of exercise classes for Bachelor students, TU Dortmund</b><br>Analysis II   |
| Winter 2021/2022 | <b>Masterseminar, Homogenization of compressible Navier–Stokes–Fourier equations, TU Dortmund</b><br><i>Lecturer: Prof. Dr. Peter Bella</i>  |
| 2020–2022        | <b>Tutor and organization of exercise classes for Analysis I-III, TU Dortmund</b><br><i>Lecturer: Prof. Dr. Peter Bella</i>  |
| 2019–2020        | <b>Tutor of exercise classes for Bachelor students, TU Dortmund</b><br>Analysis II (Summer 2020)<br>Analysis I (Winter 2019/2020)  |
| 2016–2019        | <b>Tutor of exercise classes for Diploma and Bachelor students, Universität Leipzig</b><br>Mathematik 4 für Physiker (english) (Summer 2019)<br>Mathematik 3 für Physiker (english) (Winter 2018/2019)<br>Gewöhnliche Differentialgleichungen LA Gymnasien (Summer 2018)<br>Analysis für Lehramt Grund- und Oberschule (Winter 2017/2018)<br>Mathematik für Wirtschaftswissenschaftler 2 (Summer 2017) |

## Participation in workshops and conferences

- 20.05.–25.08.2023 ICIAM23 (Tokyo, Japan; co-organizer of Minisymposium)  
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 (Praha, Czech republic)  
11.07.–15.07.2022 Equadiff 15 (Brno, Czech republic)  
23.08.–27.08.2021 Summer School “Fluids under Control” (Praha, 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 Paris Cité**, together with Richard Höfer and David Gérard-Varet  
06.09.–09.09.2021 **Czech Academy of Sciences, Praha**, together with Peter Bella and Eduard Feireisl

## Talks and posters

- August 2023  **$\Gamma$ -convergence for nearly incompressible fluids**, *ICIAM23*, Tokyo  
Talk  
May/June 2023  **$\Gamma$ -convergence for nearly incompressible fluids**, *GAMM23*, Dresden  
Talk  
18.01.2023 **Stratified fluids: On pancakes and non-local temperatures**, *Langenbach-Seminar*, WIAS Berlin, Berlin  
Talk  
09.11.2022 **An unexpected term for the Oberbeck–Boussinesq approximation**, *Séminaire EDP*, Université Paris Cité, 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  
04.10.2022 **An unexpected term for the Oberbeck–Boussinesq approximation**, *Seminar on Partial Differential Equations*, Czech Academy of Sciences, Praha  
Talk  
25.08.2022 **Homogenization of compressible fluids in porous media**, *MFM-IN 2022*, Czech Academy of Sciences, Praha  
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, Praha  
Talk

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## Languages

German native  
English fluently  
Czech basics

Prague, December 21, 2022