

### Contact Information

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### Research interests

Kinetic theory (Boltzmann equation)

Fluid mechanics (incompressible Euler equations)

### Education

since Apr. 2021 Ph.D. student in Mathematics, University of Bonn (Germany).  
Advisor: Prof. Dr. Juan J. L. Velázquez

Oct. 2019 – Feb. 2021 M.Sc. in Mathematics, University of Bonn (Germany).  
2021 Thesis: *Existence, uniqueness and stability of self-similar profiles for homoenergetic solutions of the Boltzmann equation for true Maxwell molecules*  
Advisor: Prof. Dr. Juan J. L. Velázquez

Oct. 2016– Aug. 2019 B.Sc. in Mathematics, Technische Universität Wien (Austria).  
2019 Thesis: *Convergence to equilibrium for the Fokker-Planck equation. Application of the entropy method and ergodic theory of Markov processes*  
Advisor: Prof. Dr. Anton Arnold

### Publications and Preprints

- [7] **Variational interacting particle systems and Vlasov equations**  
with Peter Gladbach.  
Preprint: arXiv:2404.04350 (2024)
- [6] **Characterizing the detailed balance property by means of measurements in chemical networks**  
with E. Franco, J. J. L. Velázquez.  
Preprint: arXiv:2402.12935 (2024)
- [5] **Description of Chemical Systems by means of Response Functions**  
with E. Franco, J. J. L. Velázquez.  
Preprint: arXiv:2309.02021 (2023)
- [4] **Rotating solutions to the incompressible Euler-Poisson equation with external particle.**  
with D. Alonso-Orán, J. J. L. Velázquez.  
*Annales de l'Institut Henri Poincaré C, to appear* – DOI: 10.4171/AIHPC/130, Preprint: arXiv:2302.01146 (2023)
- [3] **Vanishing Angular Singularity Limit to the Hard-Sphere Boltzmann Equation,**  
with J. W. Jang, A. Nota, J. J. L. Velázquez.  
*J. Stat. Phys.* 190, 77 (2023). DOI: 10.1007/s10955-023-03089-4, arXiv:2209.14075

- [2] **Longtime behavior of homoenergetic solutions in the collision dominated regime for hard potentials**  
*Pure and Applied Analysis 6-2 (2024)*, 415–454. DOI: 10.2140/paa.2024.6.415, arXiv:2202.09074
- [1] **Self-similar Profiles for Homoenergetic Solutions of the Boltzmann Equation for Non-cutoff Maxwell Molecules**,  
*J. Stat. Phys.*, 190, 27 (2023). DOI: 10.1007/s10955-022-03034-x, arXiv:2103.10744

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## Awards and Scholarships

- Apr. 2021 Hausdorff Doctoral Position (Scholarship)  
 2020/21 Deutschlandstipendium  
 2019/20 Deutschlandstipendium  
 2018 "Early Student Award" of the Austrian Mathematical Society (ÖMG)

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## Teaching assistance (at University of Bonn)

- Summer term 2024 *Oberseminar in Analysis*, co-organization
- Summer term 2023 *Graduate Seminar on Analysis*, Examiner: Dr. Eugenia Franco and Prof. Dr. Juan J. L. Velázquez  
 Topic: *Non-local equations modelling physiologically structured populations*
- Summer term 2023 *PDE & modeling*, Examiner: Prof. Dr. Sergio Conti
- Winter term 2022/23 *Graduate Seminar on Analysis*, Examiner: Prof. Dr. Juan J. L. Velázquez and Dr. Théophile Dolmaire  
 Topic: *Hydrodynamic limits of the Boltzmann equation*
- Summer term 2022 *Mathematik für Physiker II*, Examiner: Dr. Illia Karabash
- Winter term 2021/22 *Graduate Seminar on Analysis*, Examiner: Prof. Dr. Juan J. L. Velázquez  
 Topic: *Littlewood-Paley decomposition and partial differential equations*

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## Contributed talks

### At Conferences and Workshops

- Mar. 18 – 22, 2024 GAMM Annual Meeting 2024, Magdeburg (Germany). Section S14 Applied Analysis
- Jan. 22 – 26, 2024 Congreso Bienal de la Real Sociedad Matemática Española, Pamplona (Spain). Session: "New trends and perspectives in fluid dynamics"
- Feb. 26 – Mar. 4, 2023 Mini-Workshop: "Free Boundary Problems Arising in Fluid Mechanics", Mathematisches Forschungsinstitut Oberwolfach (Germany), Oberwolfach report: DOI 10.4171/OWR/2023/11

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## Participation of Schools, Conferences and Workshops

- Nov. 6 – 10, 2023 Conference: "Particle System and PDEs XI", Instituto Superior Técnico, Lisbon (Portugal). Contribution to poster session
- Sep. 5 – 10, 2022 Summer School "Trials in Wave Turbulence: from random waves to kinetic equations", GSSI, Gran Sasso Science Institute, L'Aquila (Italy)
- Feb. 7 – 11, 2022 Hausdorff School "PDE's in Fluid Mechanics", University of Bonn (Germany)
- June 14, 2024