

# Luigi Roberti

## Curriculum Vitæ

Leibniz Universität Hannover  
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### Personal Information

Place of birth Brescia (BS), Italy

Citizenship Italian

Title Dr.rer.nat.

### Current Employment

01/10/2025 – **Leibniz Universität Hannover, Institut für Angewandte Mathematik.**  
Present Wissenschaftlicher Mitarbeiter – Postdoc (Postdoctoral Research Assistant).

### Past Employment

01/10/2021 – **University of Vienna, Faculty of Mathematics.**  
30/09/2025 Universitätsassistent Praedoc (Predoctoral University Assistant).  
Mentor: Prof. Dr. ADRIAN CONSTANTIN.  
01/10/2020 – **University of Vienna, Faculty of Mathematics.**  
30/09/2021 Wissenschaftlicher Projektmitarbeiter (Scientific Project Assistant).  
Employment within the project “Equatorial wave-current interactions”,  
supported by the WWTF grant MA16-009.  
Principal Investigator: Prof. Dr. ADRIAN CONSTANTIN.

### Education

10/2020 – **Dr.rer.nat. in Mathematics**, University of Vienna.  
08/2025 Thesis: *Mathematical aspects of geophysical fluid flows*.  
Advisor: Prof. Dr. ADRIAN CONSTANTIN.  
10/2018 – **MSc in Mathematics**, University of Vienna.  
09/2020 Thesis: *On the decrease of velocity with depth in periodic water waves*.  
Advisor: Prof. Dr. ADRIAN CONSTANTIN.  
10/2015 – **BSc in Mathematics**, University of Vienna.  
08/2018 Thesis title: *Hardy's inequality*.  
Advisor: Prof. Dr. ROLAND DONNINGER.  
10/2014 – **BSc in Physics**, University of Vienna.  
03/2018 Thesis: *Bestimmung der Volumenverteilung eines Aerosols aus der Messung von dessen Extinktionskoeffizienten*.  
Advisor: Prof. Dr. HELMUTH HORVATH†.  
09/2009 – **Diploma di maturità scientifica (Science High School Diploma)**,  
07/2014 Liceo Scientifico Statale Nicolò Copernico, Brescia, Italy.

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## Publications

### Published articles

- [1] (With [E. STEFANESCU](#)) Global-in-time existence, uniqueness, and stability of solutions to a model of the Antarctic Circumpolar Current. *Discrete Contin. Dyn. Syst.* (Early Access). [doi:10.3934/dcds.2025169](https://doi.org/10.3934/dcds.2025169)
- [2] (With [B.-V. MATIOC](#) and [CH. WALKER](#)) Quasilinear parabolic equations with superlinear nonlinearities in critical spaces. *J. Differ. Equ.* **429** (2025), 283–317. [doi:10.1016/j.jde.2025.02.039](https://doi.org/10.1016/j.jde.2025.02.039)
- [3] (With [Q. DING](#)) Stratified ocean gyres with Stuart-type vortices. *Ann. Mat. Pura Appl.* **203** (2024), 2847–2862. [doi:10.1007/s10231-024-01469-5](https://doi.org/10.1007/s10231-024-01469-5)
- [4] (With [B.-V. MATIOC](#)) Weak and classical solutions to an asymptotic model for atmospheric flows. *J. Differ. Equ.* **367** (2023), 603–624. [doi:10.1016/j.jde.2023.05.023](https://doi.org/10.1016/j.jde.2023.05.023)
- [5] The surface current of Ekman flows with time-dependent eddy viscosity. *Comm. Pure Appl. Anal.* **21**(7) (2022), 2463–2477. [doi:10.3934/cpaa.2022064](https://doi.org/10.3934/cpaa.2022064)
- [6] The Ekman spiral for piecewise-constant eddy viscosity. *Appl. Anal.* **101**(15) (2022), 5528–5536. [doi:10.1080/00036811.2021.1896709](https://doi.org/10.1080/00036811.2021.1896709)
- [7] Perturbation analysis for the surface deflection angle of Ekman-type flows with variable eddy viscosity. *J. Math. Fluid Mech.* **23**(3) (2021), No. 57. [doi:10.1007/s00021-021-00586-y](https://doi.org/10.1007/s00021-021-00586-y)
- [8] On the decrease of velocity with depth in irrotational periodic water waves. *Monatsh. Math.* **193**(3) (2020), 671–682. [doi:10.1007/s00605-020-01451-2](https://doi.org/10.1007/s00605-020-01451-2)

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## Talks and Presentations

- 25/11/2025 *The mathematical modelling of wind-drift ocean currents.*  
Oberseminar Analysis und Theoretische Physik, Leibniz Universität Hannover.
- 18/06/2025 *Well-posedness of a semilinear parabolic equation arising from the modeling of atmospheric flows.*  
Workshop [Modelling of fluid propagation: mathematical theory and numerical approximation](#) (invited speaker), CIEM, Castro Urdiales.
- 24/02/2025 *Well-posedness of a semilinear parabolic equation arising from the modeling of atmospheric flows.*  
Conference on [Mathematics of Wave Phenomena](#) (invited speaker in a minisymposium), Karlsruhe Institute of Technology.
- 14/11/2024 *Well-posedness of a semilinear parabolic equation arising from the modeling of atmospheric flows.*  
[Mathematical Sciences Seminar](#) (invited speaker), University College Cork.
- 22/08/2024 *Existence, uniqueness and stability for a model of the Antarctic Circumpolar Current.*  
Workshop [Mathematical Theory of Water Waves](#), Lund University.

- 12/06/2024 *Classical well-posedness and stability for a model of the Antarctic Circumpolar Current.*  
[PDE Afternoon Seminar](#), University of Vienna.
- 10/06/2024 *Geophysical Fluid Dynamics: An overview and some recent advancements.*  
[MCMP Seminar](#) (invited speaker), University of Vienna.
- 21/09/2023 *Weak and classical solutions to an asymptotic model for atmospheric flows.*  
[ÖMG Tagung 2023](#), TU Graz.
- 16/09/2022 *On the surface deflection angle of Ekman flows with varying eddy viscosity.*  
[DMV-Jahrestagung 2022](#), Freie Universität Berlin.
- 18/02/2022 *The oceanic Ekman layer.*  
[Seminar Applied and Computational PDE](#), University of Vienna.
- 20/01/2020 *On the decrease of mean velocity with depth in irrotational water waves.*  
[Seminar: Applied PDE](#), University of Vienna.
- 18/06/2019 *The Bergman kernel and Fefferman's theorem.*  
[Complex Analysis Seminar](#), University of Vienna.

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## Participation in Conferences, Workshops, and Summer Schools

- 05/2025 Workshop [Mathematical Advances in Geophysical Fluid Dynamics](#), Mathematisches Forschungsinstitut Oberwolfach.
- 05/2024 EWM-EMS Summer School: [Water Waves and Nonlinear Dispersive Equations](#), Mittag-Leffler-Institut.
- 04/2024 Fluid Flows – Analysis and Modelling. Conference in Honour of Robin S. Johnson's 80th Birthday, University of Vienna
- 05/2023 Aspects of Nonlinear Evolution. Conference in Honour of Joachim Escher's 60th Birthday, Leibniz Universität Hannover.
- 04/2023 Workshop on [Nonlinear Dispersive Waves](#) (online attendance), University College Cork.
- 09/2021 Summer School of the Vienna School of Mathematics, Weißensee.

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## Teaching

- 2024W Proseminar “[Komplexe und Harmonische Analysis](#)” (Exercise class “Complex and Harmonic Analysis”, in German), University of Vienna.
- 2024S Proseminar “[Analysis 2](#)” (Exercise class “Analysis 2”, in German), University of Vienna.
- 2023W Proseminar “[Analysis und Lineare Algebra 1](#)” (Exercise class “Analysis and Linear Algebra 1”, in German), University of Vienna.
- 2023S Übungen zu “[Funktionalanalysis](#)” (Exercise class to “Functional Analysis”, in German), University of Vienna.
- 2022W Übungen zu “[Partielle Differentialgleichungen](#)” (Exercise class to “Partial Differential Equations”, in German), University of Vienna.

- 2022S Übungen zur Einführung in das mathematische Arbeiten und Rechentübungen (Exercise class to Introduction to mathematics and calculations, in German), University of Vienna.

### (Co-)Supervision

- 2025 BSc thesis of Stefano Mazzeo, University of Vienna (co-supervised with Dr. JÖRG WEBER).

### Peer Review Activity

Referee for *Appl. Math. Comput.* / *Appl. Math. Lett.* / *J. Differ. Equ.* / *J. Math. Phys.* / *Monats. Math.* / *Nonlinear Anal. Real World Appl.* / *Qual. Theory Dyn. Syst.* / *Pure Appl. Geophys.*

### Training

- 2025 Workshop *Diversity in Practice*, University of Vienna.

### Computer Skills and Competence

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|-----------------------|---|
| Operating systems     | Working knowledge of Windows and Linux OS.  |
| Programming languages | Working knowledge of Python, Fortran, LaTeX language and some of its text editors (Overleaf, Texmaker, TeXworks). |
| Software programs     | Working knowledge of Matlab, Wolfram Mathematica, Gnuplot.  |

### Languages

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| Italian | Native speaker.  |
| English | Excellent knowledge and understanding of both written and spoken language. |
| German  | Excellent knowledge and understanding of both written and spoken language. |

Hannover, 25. November 2025