

Luigi Roberti

Curriculum Vitæ

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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.

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](#)
- [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](#)
- [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](#)
- [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](#)
- [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](#)
- [6] The Ekman spiral for piecewise-constant eddy viscosity. *Appl. Anal.* **101**(15) (2022), 5528–5536. [doi: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](#)
- [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](#)

Talks and Presentations

- 18/06/2025 *Well-posedness of a semilinear parabolic equation arising from the modelling 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 modelling 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 modelling 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.

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.

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 Rechenübungen](#) (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, 10. November 2025