Luigi Roberti

Curriculum Vitæ

Personal Information

Date of birth	30th September 1995
Place of birth	Brescia (BS), Italy
Citizenship	Italian
Address	Oskar–Morgenstern–Platz 1, 1090 Vienna, Austria
Phone (mobile)	+39 333 983 77 69
E-mail	luigi.roberti@univie.ac.at; luigi.roberti95@gmail.com
ORCID	0000-0001-7678-7389

Employment

01/10/2021 – Present
University Assistant Predoc, University of Vienna.
Mentor: Prof. Dr. Adrian Constantin.

01/07/2021 – 30/09/2021
Scientific Project Co-worker, University of Vienna.
Employment within the project "Equatorial wave-current interactions", supported by the WWTF grant MA16-009.
Principal Investigator: Prof. Dr. Adrian Constantin.

01/10/2020 – 30/06/2021
Scientific Project Co-worker, University of Vienna.
Employment within the project "Equatorial wave-current interactions", supported by the WWTF grant MA16-009.
Principal Investigator: Prof. Dr. Adrian Constantin.

Education

10/2020 – 07/2025
Dr. rer. nat. in Mathematics, University of Vienna.
Thesis: *Mathematical aspects of geophysical fluid flows.*
Advisor: Prof. Dr. Adrian Constantin.

10/2018 – 09/2020
MSc in Mathematics, University of Vienna.
Thesis: *On the decrease of velocity with depth in periodic water waves.*
Advisor: Prof. Dr. Adrian Constantin.

10/2015 – 08/2018
BSc in Mathematics, University of Vienna.
Thesis title: *Hardy's inequality.*
Advisor: Prof. Dr. Roland Donninger.

10/2014 – 03/2018
BSc in Physics, University of Vienna.
Thesis: *Computing the volume distribution of an aerosol from the measurement of its attenuation coefficient* (in German).
Advisor: Prof. Dr. Helmuth Horvath†.

09/2009 – 07/2014
Diploma di maturità scientifica (Science High School Diploma), Liceo Scientifico Statale Nicolò Copernico, Brescia, Italy.

Publications

Preprints

[1] (With E. Stefanescu) Global-in-time existence, uniqueness and stability of solutions to a model of the Antarctic Circumpolar Current. *arXiv:2409.17013*.

Published articles

[2] (With B.-V. Matioc and Ch. Walker) Quasilinear parabolic equations with superlinear nonlinearities in critical spaces. *J. Differ. Equ.* **429** (2025), 283–317.

[3] (With Q. Ding) Stratified ocean gyres with Stuart-type vortices. *Ann. Mat. Pura Appl.* **203** (2024), 2847–2862.

[4] (With B.-V. Matioc) Weak and classical solutions to an asymptotic model for atmospheric flows. *J. Differ. Equ.* **367** (2023), 603–624.

[5] The surface current of Ekman flows with time-dependent eddy viscosity. *Comm. Pure Appl. Anal.* **21**(7) (2022), 2463–2477.

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

[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.

[8] On the decrease of velocity with depth in irrotational periodic water waves. *Monatsh. Math.* **193**(3) (2020), 671–682.

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.*
Applied PDEs Seminar, University of Vienna.

20/01/2020 *On the decrease of mean velocity with depth in irrotational water waves.*
Applied PDEs Seminar, 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 1" (Exercise class "Analysis 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 (ongoing; co-supervised with Dr. Jörg Weber).

Peer Review Activity

Referee for *Appl. Math. Comput.* / *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

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

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.

Vienna, 29/07/2025