Raphael Stuhlmeier

Contact Information

School of Engineering, Computing & Mathematics
Plymouth University
Drake Circus
PL4 8AA Plymouth, UK
Website: rstuhlmeier.github.io
Email: raphael.stuhlmeier@plymouth.ac.uk
Date & Place of Birth: 5. July 1985, Graz, Austria
Citizenship: Austrian
Marital status: Married (Rachel Schweitzer, Israeli citizen)

Employment

Lecturer (Assistant Professor w. tenure) in Applied Mathematics
2017 – present
Plymouth University – School of Engineering, Computing & Mathematics

Postdoctoral Fellow
2014 – 2017
Technion – Department of Civil & Environmental Engineering
Division of Environmental, Water & Agricultural Engineering

Research Assistant
2011-2014
University of Vienna – Faculty of Mathematics

Education

Postgraduate Certificate in Academic Practice
Plymouth University, UK
Sept. 2017 – Mar. 2019

Doctoral Studies in Mathematics (Dr. rer. nat.)
2010 - 2014
University of Vienna, Vienna, Austria
Thesis: "Some investigations of nonlinear water waves with vorticity: exact and approximate theories".
Advisor: Prof. Adrian Constantin

Diploma Studies in Mathematics (Mag. rer. nat.)
2005 - 2010
University of Vienna, Vienna, Austria
Thesis: "On surface water waves and tsunami propagation"
Advisor: Prof. Adrian Constantin

Publications

26. E. Meisner, M. Galvagno, D. Andrade, D. Liberzon and R. Stuhlmeier, Wave-by-wave forecasts in directional seas using nonlinear dispersion corrections, *Physics of Fluids* (2023), **35**, 062104.

25. D. Andrade and R. Stuhlmeier, The nonlinear Benjamin-Feir instability - Hamiltonian dynamics, primitive breathers, and steady solutions, *Journal of Fluid Mechanics* (2023), **958**, A17.

24. D. Andrade and R. Stuhlmeier, Deterministic and stochastic theory for a resonant triad, *Wave Motion* (2023) **116**, 103087.

23. M. Galvagno, D. Eeltink, and R. Stuhlmeier, Spatial deterministic wave forecasting for nonlinear sea-states, *Phys. Fluids*, (2021) **33**.

22. S. Michele, R. Stuhlmeier, and A. Borthwick, Heat transfer in the seabed boundary layer, *J. Fluid Mech.,* (2021) **928**, R4.

21. D. Andrade, R. Stuhlmeier, and M. Stiassnie, Freak waves caused by reflection, *Coastal Eng.,* (2021) **170**, 104004.

20. R. Stuhlmeier and M. Stiassnie, Deterministic wave forecasting with the Zakharov equation, *J. Fluid Mech.,* (2021) **913**, A50.

19. M. Kluczek and R. Stuhlmeier, Mass transport for Pollard waves, *Applicable Analysis,* (2020) 10.1080/00036811.2020.1766029

18. R. Stuhlmeier, T. Vrecica, and Y. Toledo, Perspectives on random water waves in D. Henry et al (Eds) *Nonlinear Water Waves – An Interdisciplinary Interface,* Birkhäuser Verlag, 2019.

17. D. Andrade, R. Stuhlmeier, and M. Stiassnie, On the generalized kinetic equation for surface water waves, blow-up, and its restraint, *Fluids*, **4** (2019) 2.

16. R. Stuhlmeier and M. Stiassnie, Nonlinear dispersion for ocean surface waves *J. Fluid Mech.*, **859** (2019), 49–58.

15. R. Stuhlmeier and D. Xu, WEC design based on refined mean annual energy production for the Israeli Mediterranean coast, *J. Waterway, Port, Coastal, Ocean Engineering*, **144** (2018), 06018002.

14. R. Stuhlmeier and M. Stiassnie, Evolution of statistically inhomogeneous degenerate water wave quartets *Phil. Trans. Roy. Soc. – A*, **376** (2018), 20170101.

13. D. Xu, R. Stuhlmeier and M. Stiassnie, Assessing the size of a twin-cylinder wave energy converter designed for real sea-states, *Ocean Engineering*, **147** (2018), 243-255.

12. D. Xu, R. Stuhlmeier and M. Stiassnie, Harnessing wave power in open seas II – Very large arrays of wave energy converters for 2D sea-states, *J. Ocean Eng. Marine Energy*, **3** (2017), 151-160.

11. R. Stuhlmeier and M. Stiassnie, Adapting Havelock's wave-maker theorem to acoustic-gravity waves, *IMA J. Appl. Math.*, **81** (2016), 631–646.

10. M. Stiassnie, U. Kadri and R. Stuhlmeier, Harnessing wave-power in open seas *J. Ocean Eng. Marine Energy*, **2** (2016), 47-57.

9. R. Stuhlmeier, Particle paths in Stokes' edge wave

J. Nonlinear Math. Phys., **22** (2015), 507 - 515 .

8. R. Stuhlmeier, On Gerstner's water wave and mass transport,
J. Math. Fluid. Mech., **17** (2015), 761–767.

7. R. Stuhlmeier, Internal Gerstner waves on a sloping bed
Discrete Contin. Dyn. Syst. Ser. A, **34** (2014), 3183 - 3192.

6. M. Stiassnie and R. Stuhlmeier, Progressive waves on a blunt interface
Discrete Contin. Dyn. Syst. Ser. A, **34** (2014), 3171 - 3182.

5. R. Stuhlmeier, Internal Gerstner waves: applications to dead water
Applicable Analysis, **93** (2014), 1451–1457.

4. R. Stuhlmeier, On constant vorticity flows beneath two-dimensional
surface solitary waves, *J. Nonlinear Math. Phys.*, **19** (2012), 1240004

3. R. Stuhlmeier, Effects of shear flow on KdV balance - applications to tsunami,
Commun. Pure Appl. Anal., **11** (2012), 1549-1561

2. R. Stuhlmeier, On edge waves in stratified water along a sloping beach
J. Nonlinear Math. Phys., **18** (2011), 127-137

1. R. Stuhlmeier, KdV theory and the Chilean tsunami of 1960,
Discrete Contin. Dyn. Syst. Ser. B, **12** (2009), 623-632

Scholarships & Grants

UK-Israel Mobility Grant (PI)
Universities UK International
Ocean surface waves and maritime infrastructure
£18,700, 2023-2024

EPSRC New Investigator Award (PI)
Engineering & Physical Sciences Research Council
EP/V012770/1 – *Stochastic wave modelling for inhomogeneous sea-states*
£208,000, 2021–2023

IMA QJMAM Fund Award
Institute of mathematics & its applications
£1,100, April 2021

LMS Celebrating New Appointments Grant
London Mathematical Society
£585, March 2019

IMA Small Grant
Institute of mathematics & its applications
£300, June 2018

Lady Davis Postdoctoral Fellowship
Technion – Faculty of Civil & Environmental Engineering
£28,000, September 2014 – September 2015

Performance Scholarship ("Leistungsstipendium")
University of Vienna
£600, 2010

Presentations at Conferences & Seminars

Extreme Waves – EXTREM23
28 August – 1 September 2023, Max Planck Institute for the Physics of Complex Systems, Dresden, Germany
(Invited speaker)

Waves and Free Surface Flows: the Next Twenty Years
15-19 May, 2023, International Centre for Mathematical Sciences, Edinburgh, UK
(Invited speaker)

Nonlinear Dispersive Waves
24–25 April, 2023, University College Cork
(Invited speaker)

British Applied Mathematics Colloquium
Minisymposium: Advances in water waves and free-surface flows
3–5 April, 2023, UWE Bristol and University of Bristol, UK
(Invited minisymposium speaker)

Isaac Newton Institute Workshop
HY2W05 Dispersive Hydrodynamics: Physical Applications
5–9 December 2022, University of Cambridge
(Invited speaker)

British Applied Mathematics Colloquium
Minisymposium: Nonlinear surface and internal waves
11-13 April, 2022, University of Loughborough
(Invited minisymposium speaker)

Fluid Dynamics Seminar
9 April, 2022, Imperial College London

XXIII International Symposium of Mathematical Methods Applied to Sciences
21-25 February, 2022, University of Costa Rica
(Invited speaker)

Applied Mathematics Seminar
14 February, 2022, University of East Anglia

UK Fluids Conference
8–10 September, 2021, University of Southampton (online)

Leeds Fluid Dynamics Symposium
16–17 June, 2021, University of Leeds (online)

Waves and Flows Meeting
28 May, 2021, University of Oxford, UK (online)
(Invited speaker)

British Applied Mathematics Colloquium
6 April, 2021, University of Glasgow, UK (online)

Fluid Dynamics Seminar
March 11, 2020, University of Warwick, UK.

Department Seminar
December 25, 2019, Faculty of Civil & Environmental Engineering, Technion, Israel.

Department Seminar
April 8, 2019, Faculty of Engineering, Tel Aviv University, Israel.

Mathematics Seminar
March 11, 2019, University of Dundee, Scotland

Applied Mathematics Seminar
January 17, 2019, UCC, Cork, Ireland

Applied Mathematics Seminar
December 27, 2018, Tel Aviv University, Israel

Applied PDE Seminar
December 6, 2018, University of Washington, Seattle, USA

Applied Mathematics Seminar
October 21, 2018, University of East Anglia, UK

Society for Underwater Technology - Environmental Forces Meeting
May 24, 2018, University of Oxford, UK
(Invited speaker)

British Applied Mathematics Colloquium
March 26–29, 2018, University of St. Andrews, UK

Applied Mathematics Seminar
January 30, 2018, Cardiff University, UK

Nonlinear Water Waves: An Interdisciplinary Interface
December 4-7, 2017, Erwin Schrödinger Institute, Vienna, Austria
(Invited speaker)

COAST Seminar
28 November, 2017, Plymouth University, UK

Applied Mathematics Seminar
1 November, 2017, Plymouth University, UK

Symposium "Mathematics, waves and geophysical flow"
December 15–16, 2016, University of Bremen, Germany

2016 Burgers Research School on Fluid Dynamics
June 6 – 10, 2016, University of Maryland, College Park, MD, USA

Department Seminar
May 16, 2016, School of Mechanical Engineering, Tel Aviv University, Israel

Department Seminar
February 11, 2016, School of Mathematical Sciences, UCC, Cork, Ireland

Water Wave Dynamics
June 1–5, 2015, Faculty of Mathematics, Vienna, Austria

Department Seminar
March 3, 2015, Faculty of Civil & Environmental Engineering
Technion – Israel Institute of Technology, Haifa, Israel

Seminar – Waseda Lab
November 25, 2014, Department of Ocean Technology, Policy and Environment
University of Tokyo, Japan

Mathematical Colloquium
October 16, 2013, Department of Mathematics, University of Linköping, Sweden

CIME Course "Nonlinear Water Waves"
June 24–28, 2013, Centro Internazionale Matematico Estivo, Cetraro, Italy

Solitons in Two-Dimensional Water Waves and Applications to Tsunami
NSF/CBMS Regional Conference in the Mathematical Sciences
May 20–24, 2013, The University of Texas - Pan American

Mathematical Aspects of Water Waves
March 15–17, 2012, King's College London, UK

IMA Conference on Nonlinearity and Coherent Structures
July 6–8, 2011, University of Reading, UK

European Geosciences Union General Assembly 2011
April 3–8, 2011, Vienna, Austria
Ocean Sciences 2.1 – Open Session on Coastal and Shelf Seas

Second Summer School on Analysis – *Spectral Theory and PDE*
September 13–17, 2010, Leibniz Universität Hannover, Germany

European Geosciences Union General Assembly 2010
May 2–7, 2010, Vienna, Austria
Ocean Sciences 21 – Recent developments in tsunami modeling and forecasting

Teaching

University of Plymouth

Fluid Dynamics	(MATH3629, 3rd year mathematics)
Numerical and Computational Methods	(MATH1610, 1st year mathematics)
Linear Algebra & Complex Numbers	(MATH1603, 1st year mathematics)
Mathematics for Computing	(MATH054, foundation computing)
Engineering Mathematics & Statistics	(MATH187, 2nd year engineering)
Engineering Mathematics & Control	(CONT221, 2nd year engineering)

Technion – Israel Institute of Technology

Partial Differential Equations	(2nd year engineering)
Differential Equations	(2nd year engineering)

Calculus Refresher for Hydrodynamics (2nd year engineering)
Advanced Topics in Environmental Science (graduate engineering)

Supervision

Dr Conor Heffernan (postdoc, 2023–present)
Dr David Andrade (postdoc, 2021–2023)
Dr Mariano Galvagno (visiting researcher, 2021–present)
Mr Henry Thomas (PhD, 2022–present)
Ms Louisa Spearing (BSc, 2020)

Professional activities & service

Programme Manager for Transnational Education (25% FTE)
2021–present
School of Engineering, Computing & Mathematics
University of Plymouth, UK

Conference organization:
Water Waves - Mathematical Theory and Applications 2022
Plymouth University – September 8–9, 2022

Water Waves - Mathematical Theory and Applications
Plymouth University – September 5–6, 2019

Seminar organization:
Plymouth University – Centre for Mathematical Sciences
Applied Mathematics Seminar (Co-organizer, 2018-present)

TAU-Technion Water Waves Seminar (Organizer and initiator, 2015-2016)
Jointly with School of Mechanical Engineering, Tel-Aviv University.

Grant reviewer:
EPSRC, UK (Member of EPSRC Peer Review College)
Erwin Schrödinger Institute for Mathematics & Physics, Vienna, Austria

Reviewer for academic journals:
Applied Mechanics Reviews
Applied Ocean Research
Deep–Sea Research Part II
Dynamics of Atmospheres and Oceans
European Journal of Mechanics – B
Fluids
Journal of Engineering Mathematics
Journal of Fluid Mechanics
Journal of Geophysical Research: Oceans
Journal of Marine Science and Engineering
Journal of Mathematical Physics
Nonlinear Analysis: Theory, Methods, & Applications
Nonlinear Analysis: Real World Applications
Ocean Dynamics
Ocean Engineering
Philosophical Transactions of the Royal Society: A
Physics of Fluids
Scientific Reports
Zeitschrift für Angewandte Mathematik und Physik

Member of URKI ECR Forum
2021–present.

Society membership: LMS, IMA.