Jörg Weber

Curriculum Vitæ

Personal information

Title	Dr. rer. nat.
Date of birth	2nd April 1993
Gender	male
Nationality	German
Address	Oskar-Morgenstern-Platz 1, 1090 Vienna, Austria
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Work experience

01/2025– **Principal Investigator of FWF ESPRIT grant**, *University of Vienna*, Faculty of Mathematics

10/2023–12/2024 **Moritz Schlick postdoctoral fellow**, *University of Vienna*, Faculty of Mathematics

09/2023–10/2023 **Junior fellow**, *Institut Mittag-Leffler*

09/2022–08/2023 **Researcher**, *Lund University*, Centre for Mathematical Sciences

09/2020–08/2022 **Postdoctoral fellow**, *Lund University*, Centre for Mathematical Sciences

10/2016–08/2020 **Research assistant**, *University of Bayreuth*, Department of Mathematics

Education

01/2017–07/2020 **Dr. rer. nat.**, *University of Bayreuth*, Department of Mathematics

2014–2016 **Master**, *University of Bayreuth*, Mathematics, secondary subject Physics

2011–2014 **Bachelor**, *University of Bayreuth*, Mathematics, secondary subject Physics

Doctoral thesis

title *The Relativistic Vlasov–Maxwell System with External Electromagnetic Fields*

supervisor Prof. Dr. Gerhard Rein

Conferences and seminars

Organised events

2025 Co-organisation of minisymposium *Bifurcation and Pattern Formation in Dynamical Systems* at *Conference on Mathematics of Wave Phenomena* at Karlsruhe Institute of Technology

2024 Co-organisation of minisymposium *Steady Water Waves* at *SIAM Conference on Nonlinear Waves and Coherent Structures* in Baltimore

2023 Organisation of *Postdoc/PhD seminar* at Institut Mittag-Leffler, Stockholm

2021–2023 Co-organisation of *Seminar on Analysis, Geometry and PDEs* at Lund University

Talks and posters

2025 Invited talk at workshop *Modelling of fluid propagation: mathematical theory and numerical approximation*, International Centre for Mathematical meetings (CIEM), Castro Urdiales

Invited talk at workshop *Mathematical Advances in Geophysical Fluid Dynamics*, Oberwolfach Research Institute for Mathematics

Invited talk at *The Thirteenth International Conference on Nonlinear Evolution Equations and Wave Phenomena: Computation and Theory*, Athens, U.S.

Invited talk in *PDE Seminar*, Georgia Institute of Technology

Invited talk at *Conference on Mathematics of Wave Phenomena*, Karlsruhe Institute of Technology

2024 Invited talk at workshop *Nonlinear Water Waves: Rigorous Analysis and Scientific Computing*, Banff International Research Station

Invited talk at workshop *Mathematical theory of water waves*, Lund University

Invited talk in seminar *Partial differential equations*, University of Konstanz

Invited talk in seminar *Material modelling*, Weierstrass Institute for Applied Analysis and Stochastics, Berlin

Talk at *SIAM Conference on Nonlinear Waves and Coherent Structures*, Baltimore

Invited talk at conference *Fluid Flows – Analysis and Modelling*, University of Vienna

Invited talk at *GAMM Annual Meeting 2024*, University of Magdeburg

Invited talk in *Applied Analysis Seminar*, Saarland University

2023 Invited talk in *MCMP Seminar* (for Master students in mathematics and physics), University of Vienna

Invited talk in *Brown PDE Seminar*, Brown University

Invited talk in programme *Order and Randomness in Partial Differential Equations*, Institut Mittag-Leffler, Stockholm

Invited talk in programme *Mathematical Problems in Fluid Dynamics, part 2*, Simons Laufer Mathematical Sciences Institute, Berkeley

Invited talk in *Differential Equations Seminar*, University of Missouri

Invited talk in joint seminar *Asymptotic Models in Fluid Dynamics*, Lund University and University of Stuttgart

2022 Invited talk at *Vienna School of Mathematics*, University of Vienna

Invited talk in *Analysis and Probability Seminar*, Chalmers University of Technology

Poster in *Workshop on spatial dynamics and related approaches*, University of Stuttgart

Talk at *SIAM Conference on Nonlinear Waves and Coherent Structures*, University of Bremen

Invited talk in seminar *Nonlinear problems in Mathematical Physics*, University of Bayreuth

Invited talk in workshop *New Directions in Water Waves*, University of Bath

Poster at conference *When Kinetic Theory meets Fluid Mechanics*, ETH Zürich

Invited talk in *DNA seminar*, Norwegian University of Science and Technology

Poster at *SIAM Conference on Analysis of Partial Differential Equations* (held online)

Talk at *Conference on Mathematics of Wave Phenomena*, Karlsruhe Institute of Technology

2021 Invited talk in *Differential Equations Seminar*, University of Missouri

Talk at *4th IMA Conference on Nonlinearity and Coherent Structures*, Loughborough University

Invited talk in *IntComSin Kolloquium*, University of Regensburg

2020 Talk in *Seminar on Analysis, Geometry, and PDEs*, Lund University

Invited talk in *CAA seminar*, University of Erlangen-Nürnberg

2019 Talk at winter school *Gradient Flows and Variational Methods in PDEs*, University of Ulm

Talk at conference *ENUMATH 2019*, Delft University of Technology

Invited talk in *Analysis and Probability Seminar*, Chalmers University of Technology

Talk at *GAMM Annual Meeting 2019*, University of Vienna

2017 Talk at *Young Researchers Meeting & CSE Workshop 2017*, University of Hamburg

Additional conferences and programmes participated in

2023 *Courant PIs Workshop* and annual meeting *Simons Collaboration on Wave Turbulence*, Courant Institute of Mathematical Sciences and Simons Foundation, New York

Abel symposium, Orkanger

Conference *Aspects of Nonlinear Evolution*, Leibniz University Hannover

2022 Seminar *Free Boundary Problems in Fluid Dynamics*, Oberwolfach seminar

Programme *Mathematical Perspectives of Gravitation beyond the Vacuum Regime*, ESI, University of Vienna (online)

2021 Programme *Mathematical Problems in Fluid Dynamics*, Mathematical Sciences Research Institute, Berkeley (online)

Teaching

Lectures

2024W *Advanced partial differential equations* (Master level), University of Vienna; designed the course content and created lecture notes; held all lectures and seminars (twice per week, in total 23 lectures, 7 seminars); held oral exams

2023S *Ordinary Differential Equations II* (Master level), Lund University; designed the course content and created lecture notes; held all lectures (twice per week, in total 18); designed and marked written and oral exams

2022S *Fourier Analysis* (Master level), Lund University; designed the course content and created lecture notes; held all lectures (twice per week, in total 16) and seminars (once per week, in total 8); designed and marked written and oral exams

2021W *Linear Analysis* (Bachelor level), Lund University; designed the course content and created lecture notes; held all lectures (twice per week, in total 18); designed and marked written and oral exams

Seminars

2025S *Analysis 2*, University of Vienna; held exercise classes

2024S *Introduction to Mathematical Methodology*, University of Vienna; held exercise classes

2024S *Bachelor seminar*, University of Vienna; provided platform for students to work towards and present their Bachelor thesis

2020S *Advanced Complex Analysis*, University of Bayreuth; held and organised seminars; marked written exams

2019W *Introduction to Ordinary Differential Equations*, University of Bayreuth; held and organised seminars; marked written exams

2018S *Introduction to Advanced Analysis*, University of Bayreuth; held and organised seminars

2018W *Vector Calculus & Advanced Mathematics for Physicists B*, University of Bayreuth; held and organised seminars; marked written exams

2014–2019 *Analysis 1* and *Analysis 2* (several times), University of Bayreuth; held and organised seminars; designed and marked written exams

(Co-)Supervision

Master's thesis

2023 Anna-Mariya Otsetova, Lund University

Bachelor's thesis

2025 Stefano Mazzeo, University of Vienna (ongoing)

2023 Abhijeet Vats, Lund University

2021 Yining Zhu, Lund University

Training

2025 Workshop *Diversity in Practice*, University of Vienna

2022S Course *Teaching and Learning in Higher Education*, Lund University

Grants

2025–2027 *ESPRIT* project *Overhanging water waves: new challenges and perspectives*, Austrian Science Fund (FWF), 340,819 EUR, DOI: 10.55776/ESP8360524

2025 *Research in Teams* programme *Waves interacting with the Antarctic Circumpolar Current*, Erwin Schrödinger Institute, Vienna, 4,800 EUR

2023 *The Fund of the Walter Gyllenberg Foundation* project *Localised pure-gravity water waves*, The Royal Physiographic Society of Lund, 46,000 SEK

2022 Travel funding for *Workshop on spatial dynamics and related approaches*, University of Stuttgart; *When Kinetic Theory meets Fluid Mechanics*, ETH Zürich; *Conference on Mathematics of Wave Phenomena*, Karlsruhe Institute of Technology (obsolete; conference was held online due to Covid-19)

Fellowships and Awards

2023 *Junior fellowship*, Institut Mittag-Leffler

2023 *Seal of Excellence* of the European Commission for a high-quality project proposal submitted under the call for Marie Skłodowska-Curie Actions Postdoctoral Fellowships 2022

2017 Nominated for *Teaching Award of the Faculty of Mathematics, Physics & Computer Sciences*, University of Bayreuth

Service

Referee for *Adv. Nonlinear Anal.* / *Classical Quantum Gravity* / *Comm. Math. Phys.* / *GEM Int. J. Geomath.* / *J. Differential Equations* / *J. Math. Fluid Mech.* / *Math. Methods Appl. Sci.* / *Math. Model. Anal.* / *Nonlinear Anal. Real World Appl.* / *Phys. D: Nonlinear Phenom.* / *Phys. Scr.* / *Plasma Phys. Control. Fusion* / *Proc. Appl. Math. Mech.* / *Z. Angew. Math. Phys.*

2023 Examiner of Master's thesis of Francisco Carvalho, Lund University

Computer skills

C++, HTML, LaTeX, Maple, Mathematica, MATLAB, Office

Languages

native German

fluent English

intermediate Swedish

Preprints

[1] (With D. S. Seth, K. Varholm and E. Wahlén). *Rigidity of symmetric doubly-periodic water waves near shear flows*. arXiv: 2504.20221.

[2] (With E. Lokharu). *An improved upper bound for the Froude number of irrotational solitary water waves*. arXiv: 2502.18181.

Publications

[3] (With A.-M. Otsetova and E. Wahlén). 'Axisymmetric capillary water waves with vorticity and swirl connecting to static unduloid configurations'. In: *J. Differential Equations* 411 (2024), 604–618. DOI: 10.1016/j.jde.2024.08.005.

[4] (With J. Bartsch, P. Knopf and S. Scheurer). 'Controlling a Vlasov–Poisson plasma by a Particle-In-Cell method based on a Monte Carlo framework'. In: *SIAM J. Control Optim.* 62.4 (2024), 1977–2011. DOI: 10.1137/23M1563852.

[5] (With E. Wahlén). 'Large-amplitude steady gravity water waves with general vorticity and critical layers'. In: *Duke Math. J.* 173.11 (2024), 2197–2258. DOI: 10.1215/00127094-2023-0054.

[6] (With E. Wahlén). 'Global bifurcation of capillary-gravity water waves with overhanging profiles and arbitrary vorticity'. In: *Int. Math. Res. Not. IMRN* 2023.20 (2023), 17377–17410. DOI: 10.1093/imrn/rnac280.

[7] (With E. Lokharu and E. Wahlén). 'On the amplitude of steady water waves with favorable constant vorticity'. In: *J. Math. Fluid Mech.* 25.3, 58 (2023). DOI: 10.1007/s00021-023-00796-6.

[8] (With A. H. Erhardt and E. Wahlén). 'Bifurcation analysis for axisymmetric capillary water waves with vorticity and swirl'. In: *Stud. Appl. Math.* 149.4 (2022), 904–942. DOI: 10.1111/sapm.12525.

[9] (With P. Knopf). 'On the two and one-half dimensional Vlasov–Poisson system with an external magnetic field: global well-posedness and stability of confined steady states'. In: *Nonlinear Anal. Real World Appl.* 65, 103460 (2022). DOI: 10.1016/j.nonrwa.2021.103460.

[10] 'Weak solutions of the relativistic Vlasov–Maxwell system with external currents'. In: *Math. Methods Appl. Sci.* 44.6 (2021), 4770–4801. DOI: 10.1002/mma.7070.

[11] 'Optimal control of the two-dimensional Vlasov-Maxwell system'. In: *ESAIM Control Optim. Calc. Var.* 27, S19 (2021). DOI: 10.1051/cocv/2020069.

[12] (With S. Günther, J. Körner, T. Lebeda, B. Pötzl, G. Rein and C. Straub). 'A numerical stability analysis for the Einstein–Vlasov system'. In: *Classical Quantum Gravity* 38.3, 035003 (2021). DOI: 10.1088/1361-6382/abcbdf.

[13] 'Confined steady states of the relativistic Vlasov–Maxwell system in an infinitely long cylinder'. In: *Kinet. Relat. Models* 13.6 (2020), 1135–1161. DOI: 10.3934/krm.2020040.

[14] (With P. Knopf). 'Optimal control of a Vlasov–Poisson plasma by fixed magnetic field coils'. In: *Appl. Math. Optim.* 81.3 (2020), 961–988. DOI: 10.1007/s00245-018-9526-5.

[15] 'Hot plasma in a container—an optimal control problem'. In: *SIAM J. Math. Anal.* 52.3 (2020), 2895–2929. DOI: 10.1137/19M1275061.

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