Contact Information

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Research Interests

Evolution Equations in Fluid Dynamics and Kinetic Theory

Employment

Oct. 2022 – present **University of Vienna**, *Assistant Professor*

Feb. 2022 – present **University of Zurich**, *Assistant Professor*
with SNSF Eccellenza Professorial Fellowship

Aug. 2017 – Jan. 2022 **EPFL**, *Research Scientist & Lecturer*
Member of PDE group

Aug. 2016 - July 2017 **Brown University**, *Tamarkin Assistant Professor*

Education

Sept. 2011 – May 2016 **Courant Institute of Mathematical Sciences, New York University**, *PhD in Mathematics*
- On Dispersive Effects In Inviscid Fluids And Non-Uniqueness Of Weak Wave Maps
- Advisor: Prof. Dr. Pierre Germain

June 2011 **ETH Zurich**, *M.Sc. in Mathematics*
- Thesis: Remarks on the Anharmonic Oscillator Model from Nonlinear Optics
- Advisors: Prof. Dr. Pierre Germain, Courant Institute of Mathematical Sciences, NYU and Prof. Dr. Michael Struwe, ETH Zurich

July 2010 **ETH Zurich**, *B.Sc. in Mathematics*
- Thesis: Das schwache Maximumsprinzip für parabolische partielle Differentialgleichungen ("The weak Maximum Principle for Parabolic Partial Differential Equations")
- Advisors: Prof. Dr. Michael Struwe, ETH Zurich

Publications and Preprints

[25] **Increased lifespan for 3D compressible Euler flows with rotation**, with Haram Ko, Benoit Pausader, Ryo Takada
preprint arXiv:2509.20505 (2025)

[24] **The cubic NLS on the line with an inverse square potential**, with Joachim Krieger, Wilhelm Schlag
preprint arXiv:2508.01919 (2025)

[23] **On the stability of viscous three-dimensional rotating Couette flow**, with Michele Coti Zelati, Augusto Del Zotto
preprint arXiv:2501.17735 (2025)

[22] **On the stability of vacuum in the screened Vlasov-Poisson equation**, with Mikaela Iacobelli, Stefano Rossi
preprint arXiv:2410.17978 (2024)

[21] **Long-time stability of a stably stratified rest state in the inviscid 2D Boussinesq equation**,
with Catalina Jurja
preprint arXiv:2408.15154 (2024)

[20] **Nonlinear Landau damping and wave operators in sharp Gevrey spaces**,
with Alexandru D. Ionescu, Benoit Pausader, Xuecheng Wang
preprint arXiv:2405.04473 (2024)

[19] **Stability of viscous three-dimensional stratified Couette flow via dispersion and mixing**,
with Michele Coti Zelati, Augusto Del Zotto
preprint arXiv:2402.15312 (2024)

[18] **On the stability of homogeneous equilibria in the Vlasov-Poisson system on $\mathbb{R}^3$**,
with Alexandru D. Ionescu, Benoit Pausader, Xuecheng Wang
Class. Quantum Grav. 40 (2023) 185007

[17] **Stability of a point charge for the repulsive Vlasov-Poisson system**,
with Benoit Pausader, Jiaqi Yang
J. Eur. Math. Soc., to appear – preprint arXiv:2207.05644 (2022)

[16] **Nonlinear Landau damping for the Vlasov-Poisson system in $\mathbb{R}^3$: the Poisson equilibrium**,
with Alexandru D. Ionescu, Benoit Pausader, Xuecheng Wang
Annals of PDE 10, 2 (2024)

[15] **Global Axisymmetric Euler Flows with Rotation**,
with Yan Guo, Benoit Pausader
Inventiones Mathematicae 231, pages 169–262 (2023)

[14] **Scattering map for the Vlasov-Poisson system**,
with Patrick Flynn, Zhimeng Ouyang, Benoit Pausader
Peking Mathematical Journal 6, 365–392 (2023)

[13] **On the stabilizing effect of rotation in the 3d Euler equations**,
with Yan Guo, Chunyan Huang, Benoit Pausader
Comm. Pure Appl. Math., Volume 76, Issue 12, December 2023, 3553-3641

[12] **Mixing and diffusion for rough shear flows**,
with Maria Colombo, Michele Coti Zelati
Ars Inveniendi Analytica, Paper No. 2 (2021)

[11] **Stability of a point charge for the Vlasov-Poisson system: the radial case**,
with Benoit Pausader
Communications in Mathematical Physics 385, 1741–1769 (2021)

[10] **Stationary Structures near the Kolmogorov and Poiseuille Flows in the 2d Euler Equations**,
with Michele Coti Zelati, Tarek M. Elgindi
Archive for Rational Mechanics and Analysis 247, 12 (2023)

[9] **On the asymptotic behavior of solutions to the Vlasov-Poisson system**,
with Alexandru D. Ionescu, Benoit Pausader, Xuecheng Wang
International Mathematics Research Notices, Issue 12, November 2022, Pages 8865–8889

[8] **Enhanced dissipation in the Navier-Stokes equations near the Poiseuille flow**,
with Michele Coti Zelati, Tarek M. Elgindi
Communications in Mathematical Physics 378, 987–1010 (2020)

[7] **The Surface Quasi-Geostrophic Equation with Random Diffusion**,
with Tristan Buckmaster, Andrea Nahmod, Gigliola Staffilani
International Mathematics Research Notices, Issue 23, November 2020, Pages 9370-9385

[6] **On the Global Stability of a Beta-Plane Equation**,
with Fabio Pusateri
Analysis & PDE, Vol. 11 (2018), No. 7, 1587-1624

[5] **On Dispersive Effects In Inviscid Fluids And Non-Uniqueness Of Weak Wave Maps**
Ph.D. Thesis, New York University, May 2016

[4] **Convergence to Stratified Flow for an Inviscid 3D Boussinesq System**
Commun. Math. Sci. Vol. 16, No. 6 (2018), 1713-1728

[3] **Long Time Stability for Solutions of a Beta-Plane Equation**,
with Tarek M. Elgindi
Comm. Pure Appl. Math., Volume 70, Issue 8, August 2017, 1425-1471

[2] **Sharp decay estimates for an anisotropic linear semigroup and applications to the SQG and inviscid Boussinesq systems**,
with Tarek M. Elgindi
SIAM Journal on Mathematical Analysis, 47 (6), 4672-4684 (2015)

[1] **Non-uniqueness of Weak Solutions to the Wave Map Problem**
Ann. Inst. H. Poincaré (C) Analyse Non Linéaire, Volume 32, Issue 3, May-June 2015, 519-532

Honors and Awards

Nov. 2021 Eccellenza Professorial Fellowship, SNSF Grant PCEFP2_203059 (amount awarded: 1,86 Mio CHF)

July 2015 NYU Dean's Student Travel Grant

April 2014 Harold Grad Memorial Prize of the Courant Institute, awarded for outstanding performance and promise as a graduate student

April 2012 Willi Studer Prize of the Department of Mathematics, ETH Zurich, for the best graduating student of the year

2011–2016 Henry MacCracken Fellowship, New York University Graduate School of Arts and Sciences

Spring 2011 Graduated as Master of Science ETH in Mathematics "with distinction", GPA 4.0

Spring 2006 Accepted for the advancement training programme of the Swiss Study Foundation

Conference Organization

Jan. 2026 SwissMAP conference on "Turbulence and Mixing in Fluid Dynamics", Les Diablerets, Switzerland – SwissMAP award CHF 30'000 towards costs

June 2025 Workshop "Blurring the lines between pure and applied through mixing", ICMS, Scotland – ICMS award of GBP 24'000 towards costs

June 2020 Minisymposium at SIAM Conference on Nonlinear Waves and Coherent Structures, Bremen, Germany – cancelled due to covid

Mini-Courses

July 2024 Summer School on "Current topics in Mathematical Physics", Zurich, Switzerland

Nov. 2023	1st "COMBO" autumn school, Max Planck Institute for Mathematics in the Sciences, Leipzig, Germany
July 2023	Conference on "Stability and Dynamics in Fluid Mechanics and Kinetic Theory", Imperial College, London, UK
August 2021	Workshop on "Fluid dynamics: qualitative and asymptotic behavior of solutions", Peyresq, France – postponed from August 2020
August 2017	Summer School "Introduction to Nonlinear Dispersive Equations", Peking University, China

Invited Talks

At Upcoming Conferences and Workshops

Sep. 2025	"2025 Clay Research Conference", Oxford University, UK
Spring 2026	Thematic Programme "Mathematical Developments in Geophysical Fluid Dynamics", IHP Paris, France
Aug. 2026	Conference on "Stable and unstable Dynamics in PDEs and Hamiltonian Systems", BIRS & CMO, Mexico
June 2027	"Conference on Dynamics, Equations and Applications (DEA 2027)", Krakow, Poland

At Research Seminars

May 2025	PDE seminar, University of Rennes, France
Feb. 2024	Analysis seminar, University of Basel, Switzerland
Nov. 2023	Analysis seminar, University of Bielefeld, Germany
Sep. 2023	Seminar "Nonlinear Analysis and PDE" joint between ENS Paris, Sorbonne University and University of Paris, Paris, France
June 2023	Oberseminar Angewandte Analysis, University of Dortmund, Germany
April 2023	PDE and Applied Math Seminar, UC Davis, USA
Nov. 2022	MCMP Seminar, Erwin Schrödinger Institute, University of Vienna, Austria
Sept. 2022	PDE seminar via zoom, Chinese Academy of Sciences, Beijing
Mar. 2022	Seminar PDE and Mathematical Physics, ETH and University of Zurich, Zurich, Switzerland
Feb. 2022	Fluids seminar, Princeton University, Princeton, USA
Feb. 2022	Analysis seminar, Carnegie Mellon University, Pittsburgh, USA
Nov. 2021	PDE seminar, Lund University, Lund, Sweden
Nov. 2021	Dynamics Seminar, Boston University, Boston, USA
April 2021	OSSUR–PDE seminar, GSSI, Italy
March 2021	Online Analysis and PDE seminar, Spain
Feb. 2021	Korea Institute for Advanced Study, Seoul, South Korea
January 2021	University of Münster, Münster, Germany
Nov. 2020	Imperial College / University College, London, UK
Nov. 2020	University of Maryland, College Park, USA
Nov. 2020	MIT, Boston, USA
October 2020	University of Basel, Basel, Switzerland
April 2020	Princeton University, Princeton, USA
October 2019	Institut Fourier, Grenoble, France

April 2019	Max Planck Institute, Leipzig, Germany
April 2019	EPFL, Switzerland
October 2018	Imperial College, London, UK
Feb. 2018	UC San Diego, CA, USA
Nov. 2017	Université de Lyon, Lyon, France
May 2017	Stanford University, Palo Alto, USA
Feb. 2017	Johns Hopkins University, Baltimore, USA
Nov. 2016	Princeton University, Princeton, USA
October 2016	UMass Amherst, USA
Nov. 2015	UC Berkeley, CA, USA
Nov. 2015	MSRI, Berkeley, CA, USA

At Conferences and Workshops

Sep. 2025	Conference "MathFlows25", Porquerolles, France
Sep. 2025	Workshop on "Boundary analysis for dispersive and viscous fluids", Pavia, Italy
Feb. 2025	Conference on "Mathematics of Wave Phenomena 2025", KIT Karlsruhe, Germany
Sep. 2024	SwissMAP Annual General Meeting, Les Diablerets, Switzerland
July 2024	European Congress of Mathematics, Sevilla, Spain
June 2024	Workshop on "Nonlinear Waves and Relativity", Erwin Schrödinger Institute, Vienna, Austria
June 2024	SwissMAP conference on "Gravitational physics and its mathematical analysis ", Les Diablerets, Switzerland
Jan. 2024	SwissMAP conference on "Phase mixing, kinetic theory and fluid mechanics", Les Diablerets, Switzerland
Sep. 2023	SwissMAP Annual General Meeting, Les Diablerets, Switzerland
August 2023	Workshop on "Stability, Mixing and Fluid Dynamics", University of Münster, Münster, Germany
August 2023	ICIAM Conference, Minisymposium on "Recent Developments in Fluid Dynamics", Tokyo, Japan
Dec. 2022	Conference "MathFlows22", CIRM Luminy, France
Sept. 2022	Conference on "Fluid Dynamics", ICMAT, Madrid, Spain
June 2022	Summer school on "Fluids and Turbulence", Institut Camille Jordan, Université de Lyon, Lyon, France
June 2022	SITE Research Center on Stability, Instability, and Turbulence online conference on "Long Time Behavior and Singularity Formation in PDEs", New York University, Abu Dhabi
May 2022	Conference "Nonlinear PDEs in Fluid Mechanics", CIRM Luminy, France
March 2022	SIAM PD22 Conference, Berlin, Germany
Feb. 2022	Conference "Mathematics of Wave Phenomena", Karlsruhe Institute of Technology, Germany
May 2020	PDE Meeting, ICMAT, Madrid, Spain – postponed
October 2021	PDE seminar at ICERM semester program "Hamiltonian Methods in Dispersive and Wave Evolution Equations", Brown University, Providence, USA
August 2021	Young Researchers Symposium at the "International Congress on Mathematical Physics", Geneva, Switzerland

June 2021	SwissMAP workshop "Emergent Theories for Wave Turbulence and Particle Dynamics", Les Diablerets, Switzerland
Dec. 2019	SIAM Conference on Analysis of PDEs, La Quinta, CA, USA
Sept. 2019	Dynamics, Equations and Applications (DEA 2019), Krakow, Poland
March 2019	AMS Western Sectional Meeting, Honolulu, USA
June 2018	Mathematical Analysis of Incompressible Fluids, Sevilla, Spain
Dec. 2017	SIAM Conference on Analysis of PDEs, Baltimore, USA
June 2017	Mathematical Questions in Wave Turbulence Theory, AIM San José, USA
June 2017	Mathematical Analysis of Water Waves and Related Models, Bodega Bay, USA
May 2016	International Conference on Evolution Equations, Nashville, USA
March 2015	AMS Eastern Sectional Meeting, Washington D. C. USA
July 2014	Hausdorff Research Trimester "Harmonic Analysis and Partial Differential Equations", Bonn, Germany
October 2012	Oberwolfach Seminar "Dispersive Equations", Oberwolfach, Germany

Teaching and Supervision

Postdocs	○ Bernhard Kepka (UZH)	*since Spring 2025*
	○ Augusto Del Zotto (UZH)	*since Fall 2024*
	○ Stefano Rossi (UZH & ETHZ)	*since Fall 2023*
PhD student	○ Catalina Jurja (UZH)	*since Feb. 2023*
UZH	○ Introduction to PDE – Lecturer	*Spring 2026*
	○ Topics in Functional Analysis – Lecturer	*Spring 2025*
	○ Harmonic Analysis – Lecturer	*Spring 2024*
	○ Introduction to Dispersive PDE – Lecturer	*Spring 2023*
	○ Student Seminar on Partial Differential Equations – Organizer	*Spring 2023*
	○ Supervision of Master thesis	*2023*
	○ Supervision of undergraduate research internship (Exchange from Orsay)	*Summer 2022*
U. of Vienna	○ Complex and Harmonic Analysis – Lecturer	*Winter 2025*
	○ Seminar in Analysis – Lecturer	*Winter 2024*
	○ Complex and Harmonic Analysis – Lecturer	*Winter 2023*
	○ Topics in Analysis – Lecturer	*Winter 2022*
	○ Supervision of Master theses	
EPFL	○ Supervision of Bachelor/Master projects and theses, semester projects	
	○ Dispersive PDEs – Lecturer	*Spring 2021*
	○ Dispersive PDEs – Lecturer	*Spring 2020*
	○ Dispersive PDEs – Lecturer	*Spring 2019*
	○ Harmonic Analysis – Teaching Assistant	*Spring 2018*
	○ Ordinary Differential Equations – Teaching Assistant	*Fall 2017 & 2018*
Brown University	○ Math1010 Analysis – Lecturer & Course Head	*Spring 2017*
	○ Math0180 Vector Calculus – Lecturer & Course Head	*Fall 2016*

NYU	○ Calculus I – Teaching Assistant	*Spring 2015 & Fall 2013*
	○ Analysis II – Teaching Assistant	*Fall 2014*
	○ Ordinary Differential Equations – Teaching Assistant	*Spring 2014*
	○ Short Course on Special Theory of Relativity – Lecturer	*March 2011*
ETH Zurich	○ Exam Preparation Course for Analysis III – Lecturer	*Spring 2010*
	○ Analysis III – Teaching Assistant and Grader	*Fall 2009*
	○ Analysis I – Teaching Assistant and Grader	*Fall 2007*

Outreach and Professional Service

Outreach

Lecture at the "Studieninformationstage Bachelor UZH" (September 2024)

Talk at Senior University "UZH3" (Spring 2024)

Lectures at winter school "Stabilizing and Destabilizing Mechanisms in Fluid Equations" (February 2023), Academy of Scientific Research and Technology, Egypt

Talk for undergraduate students at Brown University Undergrad Union (2016)

Talk for high school students at Courant Institute C-Splash (2011)

Service

Member of the "Board of the Trustees" of the Swiss Mathematical Society

Completion of "UZH Leadership Program for Professors", UZH Leadership and Governance Academy (2024), Zurich, Switzerland

Supervision of "Lehramtsprüfungen" (2023), Zurich, Switzerland

PhD thesis committee member, University of Sevilla, Spain (June 2023)

Master thesis committee member, University of Vienna, Vienna (2023)

Seminars

(Co-)Organization at NYU, Brown University, EPFL, University of Zurich, University of Vienna

Refereeing

For *Analysis & PDE*, *Ann. Henri Poincaré*, *Annali di Matematica Pura ed Applicata*, *Archive for Rational Mechanics and Analysis*, *Commun. Math. Phys.*, *Comm. PDE*, *Comm. Pure Appl. Math.*, *DFG*, *DCDS–A*, *Duke Math. Journal*, *Funkcialaj Ekvacioj*, *FSMP*, *Inventiones Mathematicae*, *J. Amer. Math. Soc.*, *J. Differential Equations*, *J. Funct. Anal.*, *J. London Math. Soc.*, *J. Math. Anal. Appl.*, *J. Math. Pures Appl.*, *Journal of Mathematical Physics*, *Journal of Nonlinear Science*, *Journal of Statistical Physics*, *Mem. Amer. Math. Soc.*, *Nonlinearity*, *Pacific Journal of Mathematics*, *Peking Mathematical Journal*, *Proc. Amer. Math. Soc.*, *SIAM Journal on Mathematical Analysis*, *Stud Appl Math.*, *Trans. Amer. Math. Soc.*

Languages

native	German
fluent	English, French, Spanish
basic	Italian