Adrian M. Ruf – Curriculum Vitae (May 4, 2021)

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Education/Employment

Since 2021 **Lecturer**, ETH Zürich, Switzerland

Since 2019 **Postdoctoral researcher**, ETH Zürich, Switzerland

Mentor: Prof. Siddhartha Mishra

2019 **PhD in Mathematics**, University of Oslo, Norway

Marie Skłodowska-Curie research position
Supervisors: Prof. Nils Henrik Risebro and Prof. Kenneth Karlsen

2016 **MSc in Mathematics**, Technical University of Berlin, Germany

Supervisor: Prof. Etienne Emmrich

2013 **BSc in Mathematics**, Technical University of Berlin, Germany

Publications

[8] J. Badwaik, C. Klingenberg, N. H. Risebro, and A. M. Ruf. Multilevel Monte Carlo finite volume methods for random conservation laws with discontinuous flux. *M2AN Math. Model. Numer. Anal.*, (2021)
doi:10.1051/m2an/2021011

[7] U. S. Fjordholm and A. M. Ruf. Second-order accurate TVD numerical methods for nonlocal nonlinear conservation laws. *SIAM J. Numer. Anal.*, 59(3): 1167–1194, (2021)
doi.org/10.1137/20M1360979

[6] A. M. Ruf. Flux-stability for conservation laws with discontinuous flux and convergence rates of the front tracking method. *IMA J. Numer. Anal.*, (2021)
doi.org/10.1093/imanum/draa101

[5] J. Badwaik and A. M. Ruf. Convergence rates of monotone schemes for conservation laws with discontinuous flux. *SIAM J. Numer. Anal.*, 58(1): 607–629, (2020)
doi:10.1137/19M1283276

[4] N. H. Risebro and A. M. Ruf. Numerical investigations into a model of partially incompressible two-phase flow in pipes. *SeMA*, 77: 143–159 (2019)
doi:10.1007/s40324-019-00207-9

[3] A. M. Ruf, E. Sande, and S. Solem. The optimal convergence rate of monotone schemes for conservation laws in the Wasserstein distance. *J. Sci. Comput.*, 80: 1764–1776, (2019)
doi:10.1007/s10915-019-00996-1

[2] J. Ridder and A. M. Ruf. A convergent finite difference scheme for the Ostrovsky–Hunter equation with Dirichlet boundary conditions. *Bit Numer. Math.*, 59: 775–796, (2019)
doi:10.1007/s10543-019-00746-7

[1] A. M. Ruf. Convergence of a full discretization for a second-order nonlinear elastodynamic equation in isotropic and anisotropic Orlicz spaces. *Z. Angew. Math. Phys.*, 68: 118, (2017)
doi:10.1007/s00033-017-0863-z

Grants and Scholarships

2021 Robert Gnehm Grant, ETH Zürich, Switzerland

2020 Research-in-Pairs Grant, Oberwolfach Research Institute for Mathematics, Germany

2019 Scholarship for NUMHYP2019, University of Málaga, Spain

2018 Scholarship for an academic secondment (3 months), ETH Zürich, Switzerland

Scholarship for HYP2018, Penn State University, USA

Invited talks

2021 *Stability and error estimates for conservation laws with discontinuous flux and application to uncertainty quantification and inverse problems*
Karlsruhe Institute of Technology, Germany

Flux-stability for conservation laws with discontinuous flux and convergence rates of the front tracking method
Sayas Numerics Seminar, USA

Nonlocal conservation laws: improved regularity and higher-order numerical methods
Carnegie Mellon University, Pittsburgh, USA

Convergence rates of numerical methods for conservation laws with discontinuous flux
TIFR Centre for Applicable Mathematics, Bangalore, India

Numerical methods for conservation laws with nonlocal and discontinuous fluxes
University of Freiburg, Germany

2020 *Convergence rates of numerical methods for conservation laws with discontinuous flux*
NTNU Trondheim, Norway

Flux-stability for conservation laws with discontinuous flux and convergence rates of the front tracking method
University of Oslo, Norway

2019 *Convergence rates of monotone schemes in the Wasserstein distance*
Julius Maximilian University of Würzburg, Germany

Second-order numerical methods for nonlocal conservation laws
Polytechnic University of Bari, Italy

Second-order numerical methods for nonlocal conservation laws
ETH Zürich, Switzerland

Contributed talks

2020 *Recent advances in numerical analysis of conservation laws with discontinuous flux*
Graduate Colloquium in Applied Mathematics
ETH Zürich, Switzerland

2019 *Convergence rates of monotone schemes for conservation laws with discontinuous flux*
UiO PDE Seminar
University of Oslo, Norway

Second-order numerical methods for nonlocal conservation laws
NumHyp2019
University of Málaga, Spain

2018 *A second-order method for nonlocal conservation laws*
BIT Circus
Aalto University, Finland

The Ostrovsky–Hunter equation with Dirichlet boundary conditions
HYP2018
Penn State University, USA

Multiphase flow in pipelines
Modcompshock Midterm Review Meeting
ETH Zürich, Switzerland

Research visits

2019 Julius Maximilian University of Würzburg, Germany,
with Jayesh Badwaik (1 week)

Polytechnic University of Bari, Italy,
with Prof. Giuseppe Coclite (1 week)

2018 ETH Zürich, Switzerland,
with Prof. Siddhartha Mishra (3 months)

Academic activities

2020 **ETH Zürich, Switzerland**
Instructor

Instructed newly hired teaching assistants at the TA Training Day (spring and fall)

2019 **Simula Research Laboratory, Fornebu, Norway**
Teaching assistant

Taught the course 'Communication Scientific Research' for PhD students and postdocs

2010 - 2016 **Technical University Berlin, Germany**
Teaching assistant

Taught courses in Functional Analysis, Calculus and Calculus for Engineers

2015 - 2016 **Matheon Research Center, Berlin, Germany**
Student assistant

Organized the Matheon advent calendar for students, coordinated and revised the calendar puzzles and solutions

2015 **TUBS, Berlin, Germany**
Coordinating assistant

Coordinated the 79th annual meeting of the DPG

2011 - 2013 **Unitus project Technical University of Berlin, Germany**
Student assistant

Created and improved activity oriented learning materials used in mathematical courses for engineers, e.g. supporting teaching material, online platform Mumie, guidelines for teaching assistants, exam difficulty analyses

2009 - 2011 **Uniseminar Education AG, Switzerland**
Freelancer

Created various mathematical teaching materials for the courses Mathematics I & II and Mathematical economics

Refereeing activity

Referee for: SIAM Journal of Numerical Analysis
IMA Journal of Numerical Analysis
ESAIM: Mathematical Modelling and Numerical Analysis
Zeitschrift für angewandte Mathematik und Physik
Calcolo
Journal of Elliptic and Parabolic Equations
International Journal of Computational Methods

Supervision

Supervised the semester thesis of D. Ochsner, 2020, ETH Zürich

Supervised two students on their semester projects, 2018, University of Oslo

Teaching experience

2021	Fall:	Lectures for 'Statistical and Numerical Methods for Chemical Engineers' (ETH Zürich–scheduled)
	Spring:	Lectures for 'Numerical Methods for Hyperbolic PDEs' (ETH Zürich)
2020	Spring:	Organization of 'Numerical Methods for Physicists' (ETH Zürich)
2019	Spring:	Exercise sessions for 'Communicating Scientific Research' (Simula)
2015	Fall:	Tutorials for 'Calculus I for Mathematicians' (TU Berlin)
	Spring:	Tutorials for 'Functional Analysis I' (TU Berlin)
2014	Fall:	Tutorials for 'Calculus I for Engineers' (TU Berlin)
	Spring:	Tutorials for 'Calculus I for Engineers' (TU Berlin)
2013	Fall:	Tutorials for 'Calculus I for Engineers' (TU Berlin)
	Spring:	Tutorials for 'Calculus I for Engineers' (TU Berlin)
2012	Fall:	Tutorials for 'Calculus I for Engineers' (TU Berlin)
	Spring:	Tutorials for 'Calculus I for Engineers' (TU Berlin)
2011	Fall:	Tutorials for 'Calculus I for Engineers' (TU Berlin)
	Spring:	Tutorials for 'Calculus II for Mathematicians' (TU Berlin)
2010	Fall:	Tutorials for 'Calculus I for Mathematicians' (TU Berlin)

Languages

German	First language
English	Proficient
Finnish	Basic knowledge
Norwegian	Basic knowledge

References

Prof. Siddhartha Mishra
ETH Zürich.
siddhartha.mishra@sam.math.ethz.ch

Prof. Ulrik Skre Fjordholm
University of Oslo.
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Prof. Nils Henrik Risebro
University of Oslo.
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