Samuel LANTHALER

PERSONAL DATA

• GOOGLE SCHOLAR • ARXIV • ORCID • WEBSITE

CITIZENSHIP: Switzerland | BORN: 18-Aug-1989
ADDRESS: 241 S Wilson Ave (Apt. 201), Pasadena, California 91106, USA
EMAIL: s.lanthaler@gmail.com

EDUCATION

11/202 – 07/20221	**Postdoc** in Mathematics at Caltech, USA
11/202 – 07/20221	**Postdoc/Lecturer** in Mathematics at ETH Zurich, Switzerland
11/2018 – 11/2021	**PhD in Mathematics** at ETH Zurich, Switzerland Thesis: "Computation and analysis of statistical solutions of the incompressible Euler equations" | Advisor: Prof. Siddhartha Mishra
08/2015 – 08/2020	**PhD in Physics** at EPF Lausanne, Switzerland Thesis: "Kinetic-MHD stability of virtually collisionless plasmas" | Advisor: Prof. Jonathan P. Graves
09/2013 – 03/2015	**Master of Science in Mathematics**, ETH Zurich
09/2010 – 09/2013	**Bachelor of Science in Mathematics**, ETH Zurich

SELECTED PUBLICATIONS

1. "Error estimates for deeponets: A deep learning framework in infinite dimensions", S. Lanthaler, S. Mishra, G.E. Karniadakis, *Trans Math Appl*, **6**(1), (2022), tnac001,
2. "On universal approximation and error bounds for Fourier neural operators", N. Kovachki, S. Lanthaler, S. Mishra, *JMLR*, **22**(290), (2021), 1-76
3. "Statistical solutions of the incompressible Euler equations", S. Lanthaler, S. Mishra, C. Parés-Pulido, *Math. Models Methods Appl. Sci.* (M^3AS), **31**(2), (2021), 223-292
4. "On the conservation of energy in two-dimensional incompressible flows", S. Lanthaler, S. Mishra, C. Parés-Pulido, *Nonlinearity*, **34**(2), (2021), 1084
5. "On the convergence of the spectral viscosity method for the two-dimensional incompressible Euler equations with rough initial data", S. Lanthaler, S. Mishra, *Found Comput Math*, **20**, (2020), 1309–1362

SCIENTIFIC PRESENTATIONS

- Minisymposium on "Operator Learning in PDEs, Inverse Problems, and UQ" SIAM UQ22 (hybrid), Atlanta GA (2022),
- Minisymposium on "Recent Advances on Analysis and Numerics of Multidimensional Compressible Flows", SIAM PD22 (virtual), (2022),
- *Swiss Numerics Day 2021*, EPF Lausanne, Switzerland (2021),
- Seminar on "Physics-Informed Learning Machines for Multiscale and Multiphysics Problems" (PhILMs), *via Zoom*, invited by G.E. Karniadakis, Brown University (2021),
- Minisymposium on *Incompressible Fluid Mechanics*, SIAM PD19 in La Quinta, CA (2019),
- Workshop on *Interfaces and Instabilities in Fluid Dynamics* at the Hausdorff Research Institute in Mathematics in Bonn, Germany (2019),
- Invited speaker: *Theory of Fusion Plasmas*, Varenna-Lausanne intl. workshop (2018),
- *XV Intl. Conference on Hyperbolic Problems (Hyp2014)*, in Rio de Janeiro, Brazil (2014).

Teaching experience

- **Lecturer** for "Numerical Methods for Hyperbolic PDEs" (ETH Zurich; Spring 2022)
- **Co-supervision of young researchers:** (ETH Zurich, Spring and Autumn 2021)
  - **master theses (3)** (Fabian Jin, 2021, *awarded ETH Medal*; Patrik Hadorn, 2021; Michael Prasthofer, 2021),
  - **semester theses (2)** (Fabian Jin, 2021; Patrik Hadorn, 2021).
- **Head assistant** for **Linear Algebra** (autumn semesters 2019;2020;2021);
  - Conducting and organizing examinations, **350 students**,
  - Organization of exercise classes and exercises, **8 TAs**,
- **Class-room teaching:** TA for various courses at ETH Zurich and EPF Lausanne, in both *mathematics* and *physics*, including
  - Numerical Methods for Hyperbolic PDEs (ETHZ; 2019),
  - Mathematical Methods for Physicists (EPFL; 2017, 2018),
  - Advanced Physics (EPFL; 2017),
  - Computational Physics (EPFL; 2015, 2016),
  - Numerical Mathematics (ETHZ; 2013),
  - Differential Geometry (ETHZ; 2012)

Recognition and Awards

05/2022	ETH Medal (ETH Zurich) Awarded for outstanding doctoral thesis
01/2022 – 12/2024	GAMM Junior Fellow Elected by the International Association of Applied Mathematics and Mechanics (GAMM) for outstanding work in doctoral thesis (10 junior fellows per year)
01/2015	ETH Medal (ETH Zurich) Awarded for outstanding master's thesis
09/2013 – 01/2015	Excellence Scholarship and Opportunity Programme (ETH Zurich) A special scholarship to cover the full study and living costs for the duration of master's degree, as well as specific supervision.
12/2013	Polya prize (ETH Zurich) Awarded for best bachelor's degree in mathematics and physics.

Professional service

- Journal referee for Calcolo, Journal of Scientific Computing, IMA Journal of Numerical Analysis, Communications in Computational Physics and SIAM Journal on Scientific Computing.

Programming Experience

Extended Experience:	C++, Fortran-90/03 (with MPI-parallelization), MATLAB, Python
Basic Knowledge:	CUDA, OpenACC, HTML

Languages

English:	Fluent (C2)	French:	Advanced (C1)
German:	Mothertongue	Korean:	Intermediate (B1)