Research Output

Samuel Lanthaler

August 1, 2022

Preprints

1. "On concentration in vortex sheets", S. Lanthaler, (2020), *preprint*, *arXiv:2004.01537*

Publications in peer-reviewed scientific journals

Papers with joint authorship/as first author:

2. "On Bayesian data assimilation for PDEs with ill-posed forward problems", S. Lanthaler, S. Mishra, F. Weber, (2022), , *Inverse Problems*, **38**(8):085012 (2022)

3. "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,

4. "On universal approximation and error bounds for Fourier neural operators", N. Kovachki, S. Lanthaler, S. Mishra, *Journal of Machine Learning Research*, **22**(290), (2021), 1-76

5. "On the approximation of functions by tanh neural networks", T. De Ryck, S. Lanthaler, S. Mishra, *Neural Networks*, **143**, (2021), 732-750

6. "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

7. "On the conservation of energy in two-dimensional incompressible flows", S. Lanthaler, S. Mishra, C. Parés-Pulido, *Nonlinearity*, **34**(2), (2021), 1084

8. "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

9. "Guiding-centre theory for kinetic-magnetohydrodynamic modes in strongly flowing plasmas", S. Lanthaler, J. P. Graves, D. Pfefferlé, W. A. Cooper, *Plasma Phys. Control. Fusion*, **61**, (2019), 074006

10. "Higher order Larmor radius corrections to guiding-centre equations and application to fast ion equilibrium distributions", S. Lanthaler, D. Pfefferlé, J. P. Graves, W. A. Cooper, *Plasma Phys. Control. Fusion*, **59**, (2017), 044014

11. "Statistical solutions of hyperbolic conservation laws I: Foundations", U. S. Fjordholm and S. Lanthaler and S. Mishra, *Arch. Ration. Mech. An.*, **226**(2), (2017), 809–849

12. "Computation of measure-valued solutions for the incompressible Euler equations", S. Lanthaler, S. Mishra, *Math. Models and Methods Appl. Sci.*, **25**, (2015), 2043-2088

Co-authored papers:

13. "Three-dimensional magnetohydrodynamic equilibrium of quiescent H-modes in tokamak systems", W. A. Cooper, J. P. Graves, B. P. Duval, O. Sauter, J. M. Faustin, A. Kleiner, S. Lanthaler, H. Patten, M. Raghunathan, T.-M. Tran, *Pasma Phys. Control. Fusion*, **58**, (2016) 064002

14. "Modelling of advanced three-ion ICRF heating and fast ion generation scheme for tokamaks and stellarators", J. M. Faustin, J. P. Graves, W. A. Cooper, S. Lanthaler, L. Villard, D. Pfefferlé, J. Geiger, Ye O. Kazakov, D. Van Eester, *Pasma Phys. Control. Fusion*, **59**, (2017) 084001

15. "The DEMO wall load challenge", R. Wenninger, R. Albanese, R. Ambrosino, F. Arbeiter, J. Aubert, C. Bachmann, L. Barbato, T. Barrett, M. Beckers, W. Biel, L. Boccaccini, D. Carralero, D. Coster, T. Eich, A. Fasoli, G. Federici, M. Firdaouss, J. Graves, J. Horacek, M. Kovari, S. Lanthaler, V. Loschiavo, C. Lowry, H. Lux, G. Maddaluno, F. Maviglia, R. Mitteau, R. Neu, D. Pfefferlé, K. Schmid, M. Siccinio, B. Sieglin, C. Silva, A. Snicker, F. Subba, J. Varje and H. Zohm, *Nuclear Fusion*, **57**, (2017) 046002

16. "Stellarator nonlinearly saturated periodicity-breaking ideal magnetohydrodynamic equilibrium states", W. A. Cooper, D. López-Bruna, M. A. Ochando, F. Castejón, J. P. Graves, A. Kleiner, S. Lanthaler, H. Patten, M. Raghunathan, J. M. Faustin and the TJ-II Team, *Nuclear Fusion*, **58**, (2018) 124002

17. "Reduced models for parallel magnetic field fluctuations and their impact on pressure gradient driven MHD instabilities in axisymmetric toroidal plasmas", J. P. Graves, D. Zullino, D. Brunetti, S. Lanthaler, C. Wahlberg, *Pasma Phys. Control. Fusion*, **61**, (2019) 104003

Peer-reviewed books/monographs

- "Kinetic-MHD stability of virtually collisionless plasmas", S. Lanthaler, *PhD Thesis-No. 10'142*, (2020), EPFL
- "Computation and analysis of statistical solutions of the incompressible Euler equations", S. Lanthaler, *Diss. ETH No. 27930*, (2022), ETH Zurich

Unpublished work

- "On the first and second variation of area and its applications", S. Lanthaler, *BSc thesis, (2013) ETH Zurich*
- "Computation of measure-valued solutions of the incompressible Euler equations", S. Lanthaler, *MSc thesis, (2015) ETH Zurich*