Simon Foucart

Abridged Curriculum Vitae

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Primary Positions

2019- Professor of Mathematics, Texas A&M University, College Station
2015-19 Associate Professor of Mathematics, Texas A&M University, College Station
2013-15 Assistant Professor of Mathematics, University of Georgia, Athens
2010-13 Assistant Professor of Mathematics, Drexel University, Philadelphia
2009-10 Postdoctoral Researcher, Université Pierre et Marie Curie, Paris, France
2006-09 Assistant Professor of Mathematics (NTT), Vanderbilt University, Nashville

Secondary Commitments

2025- Joint Appointee, Theoretical Division, Los Alamos National Laboratory
2021- Associate Director for External Academic Engagement, Texas A&M Institute of Data Science

Visiting Positions

Visits of one month or more at Clare Hall (University of Cambridge, 2025), Isaac Newton Institute (University of Cambridge, 2024), Los Alamos National Laboratory (2023), Wisconsin Institute for Discovery (UW–Madison, 2019), LAAS-CNRS (Toulouse, 2018), Hong Kong University of Science and Technology (2017), University of South Florida (2015), University of Bonn (2009).

Academic Training

2001-05	PhD in Math (Numerical Analysis group)	University of Cambridge, U.K.
2000-01	Part III of Math Tripos (with distinction)	University of Cambridge, U.K.
1998-01	Masters of Engineering	Ecole Centrale Paris, France
1998-99	Licence de Mathématiques	Université Pierre et Marie Curie, Paris, France

Honors and Awards

2024 *Heilbronn Distinguished Visiting Fellow*, Isaac Newton Institute, Cambridge, U.K.
2019 *Presidential Impact Fellow*, Texas A&M University
2012 *Antelo Devereux Award for Young Faculty*, Drexel University
2010 *Journal of Complexity* Best Paper Award

Research Interests

Mathematics of Data Science and Artificial Intelligence; Compressive Sensing; Approximation Theory; Computational Mathematics; Bioinformatics

Publications

Books

2. *Mathematical Pictures at a Data Science Exhibition.*
Cambridge University Press, 2022.

1. *A Mathematical Introduction to Compressive Sensing.*
Birkhäuser, Applied and Numerical Harmonic Analysis, 2013. With H. Rauhut.

Refereed Articles

Selected from 2 surveys, 58 journals papers (including 3 as submitted), and 12 proceedings papers:

10. *Learning the maximum of a Hölder function from inexact data.*
Proceedings of the American Mathematical Society. Accepted.
9. *Worst-case learning under a multifidelity model.*
SIAM/ASA Journal on Uncertainty Quantification, 13, 171–194, 2025. With N. Hengartner.
8. *Nonlinear approximation and (deep) ReLU networks.*
Constructive Approximation, 55, 127–172, 2022. With I. Daubechies, R. DeVore, B. Hanin, G. Petrova.
7. *Determining projection constants of univariate polynomial spaces.*
Journal of Approximation Theory, 235, 74–91, 2018. With J. B. Lasserre.
6. *Exponential decay of reconstruction error from binary measurements of sparse signals.*
IEEE Transactions on Information Theory, 63/6, 3368–3385, 2017. With R. Baraniuk, D. Needell, Y. Plan, and M. Wootters.
5. *Stability and robustness of ℓ_1-minimizations with Weibull matrices and redundant dictionaries.*
Linear Algebra and its Applications, 441, 4–21, 2014.
4. *Quikr: a method for rapid reconstruction of bacterial communities via compressive sensing.*
Bioinformatics, 29/17, 2096–2102, 2013. With D. Koslicki, G. Rosen.
3. *Hard thresholding pursuit: an algorithm for Compressive Sensing.*
SIAM Journal on Numerical Analysis, 49/6, 2543–2563, 2011.
2. *The Gelfand widths of ℓ_p-balls for $0 < p \leq 1$.*
Journal of Complexity, 26/6, 629–640, 2010. With A. Pajor, H. Rauhut, T. Ullrich.
1. *Sparsest solutions of underdetermined linear systems via ℓ_q-minimization for $0 < q \leq 1$.*
Applied and Computational Harmonic Analysis, 26/3, 395–407, 2009. With M.-J. Lai.

Oral Presentations

6 plenary addresses at international meetings, 6 short courses in 5 countries, 71 invited conference presentations across the world, 7 contributed conference presentations, 14 colloquia, 53 seminar talks.

Professional Services

Editorial Boards

- *Journal of Approximation Theory* (journal, Aug 2017-)
- *Sampling Theory, Signal Processing, and Data Analysis* (journal, Jun 2020-)
- *Journal of Numerical Mathematics* (journal, May 2021-)
- *Numerical Mathematics and Scientific Computation* (book series, Oxford University Press, Jul 2023-)
- *Journal of Complexity* (journal, Sep 2023-)
- *Surveys in Approximation Theory* (online journal, Sep 2023-)

Reviewing

Refereed for 50 journals (e.g. Advances in Mathematics, Foundations of Computational Mathematics, Journal of Functional Analysis, Proceedings of the AMS, SIAM/ASA Journal on Uncertainty Quantification, SIAM Journal on Applied Algebra and Geometry), for 15 conferences, for 3 book publishers, and for the national science foundations of 8 countries.

Organization

(Co)organized 3 workshops, 8 special sessions at conferences, and 2 conferences, including the inaugural conference of Texas A&M's (now defunct) Center for Approximation and Mathematical Data Analytics, of which I was the director.