CV: Matthew J. Colbrook

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Academic positions

- Oct. 2025 – present: Associate Professor, University of Cambridge, UK.
  As of October 2026, head of Cambridge x QRT Labs.
- Oct. 2022 – Sep. 2025: Assistant Professor, University of Cambridge, UK.
- Oct. 2021 – Sep. 2022: Fondation Sciences Mathématiques de Paris Fellow, École Normale Supérieure (Paris).
- Oct. 2020 – Sep. 2022: Junior Research Fellow, Trinity College, University of Cambridge, UK.

Education

- October 2016 – September 2020: University of Cambridge, St John's College, UK
  PhD, Mathematics, Cambridge Centre for Analysis
  Thesis: *The Foundations of Infinite-Dimensional Spectral Computations*.
  Awarded SIAM Richard C. DiPrima Prize 2022.
- Academic year 2015 – 2016: University of Cambridge, St John's College, UK
  MMath, Mathematics. Grade: Distinction.
  Awarded Mayhew Prize 2016 (ranked top in the department).
- October 2012 – July 2015: University of Cambridge, St John's College, UK
  BA (Hons), Mathematics. Grade: 1st every year.

Selected prizes/awards

- *Popov Prize 2023*: International early career prize in approximation theory (awarded every three years).
- *IMA Leslie Fox (2nd) Prize 2023*: International early career prize in numerical analysis (awarded every two years).
- *SIAM Activity Group on Computational Science and Engineering Best Paper Prize 2023*: International prize for best paper on "the development and use of mathematical and computational tools and methods for solving problems that may arise in broad areas of science, engineering, technology, and society" (awarded every two years).
- *SIAM Richard C. DiPrima Prize 2022*: International doctoral dissertation prize in applied mathematics (awarded every two years).
- *IMA Lighthill–Thwaites Prize 2021*: International early career prize in applied mathematics (awarded every two years).
- *Cecil King Travel Scholarship Award 2020*: Annual early career prize of the London Mathematical Society.
- *Grade 1 Smith/Rayleigh–Knight Prize 2018*: Annual prize for best graduate research in mathematics at Cambridge.
- *Mayhew Prize 2016*: Top masters student in applied mathematics and theoretical physics, University of Cambridge.

Publications

Upcoming book, ≈700 pages (to appear August 2026)

62. M.J. Colbrook, *Infinite-Dimensional Spectral Computations*, **Cambridge University Press**.

Submitted journal articles, see website for pdfs

61. M.J. Colbrook, I. Mezić, A. Stepanenko, *Adversarial Dynamical Systems Reveal Limits and Rules for Trustworthy Data-Driven Learning*.
60. J. Ben-Artzi, M. Colbrook, A. Hansen, O. Nevanlinna, M. Seidel, *Computing Spectra - On the solvability complexity index hierarchy and towers of algorithms*.
59. M. Colbrook, M. Embree, J. Fillman, *Optimal Algorithms for Quantifying Spectral Size with Applications to Quasicrystals*.
58. N. Boullé, M. Colbrook, G. Conradie, *Convergent Methods for Koopman Operators on Reproducing Kernel Hilbert Spaces*.
57. A. Herwig, M. Colbrook, O. Junge, P. Koltai, J. Slipantschuk, *Avoiding spectral pollution for transfer operators using residuals*.
56. S. Mohammad-Taheri, M. Colbrook, S. Brugiapaglia, *Deep greedy unfolding: Sorting out argsorting in greedy sparse recovery algorithms*.
55. S. Andre-Sloan, A. Mukherjee, M. Colbrook, *Noisy PDE Training Requires Bigger PINNs*.

Journal publications (reverse chronological, excluding conference articles - these are shown below)

54. M.J. Colbrook, C. Drysdale, *Universal Methods for Nonlinear Spectral Problems*, **Journal of Spectral Theory**, to appear.

53. M. Bou-Sakr-El-Tayar, J.J. Bramburger, M.J. Colbrook, *Weighted Birkhoff Averages Accelerate Data-Driven Methods*, **Proceedings of the Royal Society A**, 2026.
Cover highlight for issue.

52. M.J. Colbrook, Z. Drmač, A. Horning, *An Introductory Guide to Koopman Learning*, **Operator Theory Encyclopedia**, 2026.

51. N. Zagli, M.J. Colbrook, V. Lucarini, I. Mezić, J. Moroney, *Bridging the Gap between Koopmanism and Response Theory: Using Natural Variability to Predict Forced Response*, **SIAM Journal on Applied Dynamical Systems**, 2026.

50. C. Drysdale, M.J. Colbrook, M. Woodley, *Computation and Verification of Spectra for Non-Hermitian Systems*, **Physical Review Letters**, 2025.

49. M.J. Colbrook, C. Drysdale, A. Horning, *Rigged Dynamic Mode Decomposition: Data-Driven Generalized Eigenfunction Decompositions for Koopman Operators*, **SIAM Journal on Applied Dynamical Systems**, 2025.

48. M.J. Colbrook, A. Horning, T. Xie, *Computing Generalized Eigenfunctions in Rigged Hilbert Spaces*, **Pure and Applied Analysis**, 2025.

47. N. Boullé, M.J. Colbrook, *Multiplicative Dynamic Mode Decomposition*, **SIAM Journal on Applied Dynamical Systems**, 2025.

46. A. Hales, M. Colbrook, C. Jiang, *Improving Dynamic Mode Decomposition of Tandem Cylinder Flow with Nonlinear Dictionaries*, **Physics of Fluids**, 2025.
Selected as *Featured article*.

45. B. Adcock, M.J. Colbrook, M. Neyra-Nesterenko, *Restarts subject to approximate sharpness: A parameter-free and optimal scheme for first-order methods*, **Foundations of Computational Mathematics**, 2025.

44. M.J. Colbrook, A. Townsend, *Avoiding discretization issues for nonlinear eigenvalue problems*, **SIAM Journal on Matrix Analysis and Applications**, 2025.

43. N. Boullé, M.J. Colbrook, *On the Convergence of Hermitian Dynamic Mode Decomposition*, **Physica D: Nonlinear Phenomena**, 2025.

42. M.J. Colbrook, A. Townsend, *Rigorous data-driven computation of spectral properties of Koopman operators for dynamical systems*, **Communications on Pure and Applied Mathematics**, 2024.
Certificate for top cited article in CPAM.

41. M.J. Colbrook, *The Multiverse of Dynamic Mode Decomposition Algorithms*, **Handbook of Numerical Analysis**, 2024.

40. M.J. Colbrook, *Another look at Residual Dynamic Mode Decomposition in the regime of fewer Snapshots than Dictionary Size*, **Physica D: Nonlinear Phenomena**, 2024.

39. M.J. Colbrook, Q. Li, R.V. Raut, A. Townsend, *Beyond expectations: Residual Dynamic Mode Decomposition and Variance for Stochastic Dynamical Systems*, **Nonlinear Dynamics**, 2024.

38. M.J. Colbrook, *The mpEDMD Algorithm for Data-Driven Computations of Measure-Preserving Dynamical Systems*, **SIAM Journal on Numerical Analysis**, 2023.

37. M.J. Colbrook, L. Ayton, M. Szőke, *Residual Dynamic Mode Decomposition: Robust and verified Koopmanism*, **Journal of Fluid Mechanics**, 2023.

36. M.J. Colbrook, A.C. Hansen, *The foundations of spectral computations via the solvability complexity index hierarchy*, **Journal of the European Mathematical Society**, 2023.

35. M.J. Colbrook, A. Horning, K. Thicke, A. Watson, *Computing spectral properties of topological insulators without artificial truncation or supercell approximation*, **IMA Journal of Applied Mathematics**, 2023.

34. M.J. Colbrook, V. Antun, A.C. Hansen, *The difficulty of computing stable and accurate neural networks: On the barriers of deep learning and Smale's 18th problem*, **Proceedings of the National Academy of Sciences**, 2022.

33. M.J. Colbrook, *Computing semigroups with error control*, **SIAM Journal on Numerical Analysis**, 2022.
Prize: *IMA Leslie Fox (2nd) Prize 2023*

32. M.J. Colbrook, *On the computation of geometric features of spectra of linear operators on Hilbert spaces*, **Foundations of Computational Mathematics**, 2022.

31. M.J. Colbrook, *WARPd: A linearly convergent first-order method for inverse problems with approximate sharpness conditions*, **SIAM Journal on Imaging Sciences**, 2022.

30. D. Johnstone, M.J. Colbrook, A. Nielsen, P. Öhberg, C. Duncan, *Bulk Localised Transport States in Infinite and Finite Quasicrystals via Magnetic Aperiodicity*, **Physical Review B**, 2022.
Editors' highlight for issue.

29. M.J. Colbrook, L.J. Ayton, *A contour method for time-fractional PDEs and an application to fractional viscoelastic beam equations*, **Journal of Computational Physics**, 2022.

28. T. Loss, M.J. Colbrook, A.C. Hansen, *Stratified sampling based compressed sensing for structured signals*, **IEEE Transactions on Signal Processing**, 2022.

27. M.J. Colbrook, A. Horning, A. Townsend, *Computing spectral measures of self-adjoint operators*, **SIAM Review**, 2021.
Cover highlight for issue.
Prize: *SIAM Activity Group on Computational Science and Engineering Best Paper Prize 2023*.

26. M.J. Colbrook, *Computing spectral measures and spectral types*, **Communications in Mathematical Physics**, 2021.

25. M.J. Colbrook, L.J. Ayton, *Do we need non-linear corrections? On the boundary Forchheimer equation in acoustic scattering*, **Journal of Sound and Vibration**, 2021.

24. L.J. Ayton, M.J. Colbrook, T. Geyer, P. Chaitanya, E. Sarradj, *Reducing aerofoil-turbulence interaction noise through chordwise-varying porosity*, **Journal of Fluid Mechanics**, 2021.

23. M.J. Colbrook, A. Kisil, *A Mathieu function boundary spectral method for diffraction by multiple variable poro-elastic plates, with applications to metamaterials and acoustics*, **Proceedings of the Royal Society A**, 2020.
Cover highlight for issue.

22. M.J. Colbrook, Z.I. Botev, K. Kuritz, S. MacNamara, *Kernel density estimation with linked boundary conditions*, **Studies in Applied Mathematics**, 2020.

21. M.J. Colbrook, *Extending the unified transform: Curvilinear polygons and variable coefficient PDEs*, **IMA Journal of Numerical Analysis**, 2020.

20. M.J. Colbrook, *Pseudoergodic operators and periodic boundary conditions*, **Mathematics of Computation**, 2020.

19. M.J. Colbrook, M.J. Priddin, *Fast and spectrally accurate numerical methods for perforated screens*, **IMA Journal of Applied Mathematics**, 2020.

18. M.J. Colbrook, B. Roman, A.C. Hansen, *How to compute spectra with error control*, **Physical Review Letters**, 2019.
Cover highlight for issue.
Prizes: *Grade 1 Smith–Knight/Rayleigh–Knight Prize 2018* and *IMA Lighthill–Thwaites Prize 2021*.

17. M.J. Colbrook, A.C. Hansen, *On the infinite-dimensional QR algorithm*, **Numerische Mathematik**, 2019.

16. M.J. Colbrook, L.J. Ayton, A.S. Fokas, *The unified transform for mixed boundary condition problems in unbounded domains*, **Proceedings of the Royal Society A**, 2019.
Prize: *IMA Lighthill–Thwaites Finalist 2021*.

15. M.J. Colbrook, A.S. Fokas, P. Hashemzadeh, *A hybrid analytical-numerical technique for elliptic PDEs*, **SIAM Journal on Scientific Computing**, 2019.

14. M.J. Colbrook, L.J. Ayton, *A spectral collocation method for acoustic scattering by multiple elastic plates*, **Journal of Sound and Vibration**, 2019.

13. F. de Barros, M.J. Colbrook, A.S. Fokas, *A hybrid analytical-numerical method for solving advection-dispersion problems on a half-line*, **International Journal of Heat and Mass Transfer**, 2019.

12. M.J. Colbrook, N. Flyer, B. Fornberg, *On the Fokas method for the solution of elliptic problems in both convex and non-convex polygonal domains*, **Journal of Computational Physics**, 2018.

11. M.J. Colbrook, X. Ma, P. Hopkins, J. Squire, *Scaling laws of passive-scalar diffusion in the interstellar medium*, **Monthly Notices of the Royal Astronomical Society**, 2017.

Refereed conference articles

10. A. Hales, M.J. Colbrook, C. Jiang, R. Dixon, C. de Silva, C. Doolan, D. Moreau, *A Comparative Modal Analysis of the Interaction of Flow with Tandem Cylinders*, **AIAA/CEAS Aeroacoustics**, 2025.

9. B. Sharma, E. Totten, S. Damani, H. Butt, A. Hales, W. Devenport, T. Lowe, M.J. Colbrook, *Characterizing Superstructures in Rough-Wall Turbulence*, **AIAA/CEAS Aeroacoustics**, 2025.

8. C. Drysdale, M.J. Colbrook, *A Novel Use of Pseudospectra in Mathematical Biology: Understanding HPA Axis Sensitivity*, **Mathematical Models for Interacting Dynamics on Networks**, 2024.
7. S. Mohammad-Taheri, M.J. Colbrook, S. Brugiapaglia, *OMP-Net: Neural network unrolling of weighted Orthogonal Matching Pursuit*, **CoSeRa**, 2024.
6. H. Butt, S. Damani, S. Chaware, M. Szoke, S. Srivastava, T. Lowe, W. Devenport, A. Hales, M.J. Colbrook, L. Ayton, *Pressure Gradient Effects on Boundary Layer Superstructures*, **AIAA/CEAS Aeroacoustics**, 2023.
5. M.J. Colbrook, A. Horning, *SpecSolve: Spectral methods for spectral measures*, **ICOSAHOM**, 2020+1.
4. L.J. Ayton, M.J. Colbrook, T. Geyer, P. Chaitanya, E. Sarradj, *Modelling chordwise-varying porosity to reduce aerofoil-turbulence interaction noise*, **AIAA/CEAS Aeroacoustics**, 2021.
3. M.J. Colbrook, L.J. Ayton, *Non-linear Forchheimer corrections in acoustic scattering*, **AIAA/CEAS Aeroacoustics**, 2021.
2. L.J. Ayton, M.J. Colbrook, A.S. Fokas, *The unified transform: A spectral collocation method for acoustic scattering*, **AIAA/CEAS Aeroacoustics**, 2019.
1. M.J. Colbrook, V. Antun, A.C. Hansen, *On the existence of stable and accurate neural networks for image reconstruction*, **SPARS**, 2019.

Outreach articles and interviews

- S. Brunton, M.J. Colbrook, *Resilient data-driven dynamical systems with Koopman: An infinite-dimensional numerical analysis perspective*, **SIAM News**, 2023.
  Cover highlight for issue.
- V. Antun, M.J. Colbrook, A.C. Hansen, *Proving existence is not enough: Mathematical paradoxes unravel the limits of neural networks in AI*, **SIAM News**, 2022.
  Cover highlight for issue.
- M.J. Colbrook, V. Antun, A. Hansen, *Mathematical paradoxes unearth the boundaries of AI*, **ScienceBreaker**, 2022.
- M.J. Colbrook, *Unscrambling the Infinite: Can we Compute Spectra?*, **IMA Mathematics Today**, 2021.
- *Some AI systems may be impossible to compute*, **IEEE spectrum** interview (world's leading engineering magazine).
  https://spectrum.ieee.org/deep-neural-network
- *Mathematical paradox demonstrates the limits of AI*, interview for **University of Cambridge Research News**, 2022.
  https://www.cam.ac.uk/research/news/mathematical-paradox-demonstrates-the-limits-of-ai

Funding and Service to Department

- From October 2026: Head of Cambridge x QRT Labs at University of Cambridge, *Mathematical Foundations of Large Complex Systems and Artificial Intelligence*, PI, $\approx$ £5m of funding.
- 2024 – 2025: INT/UCAM Early Career Support Scheme.
- 2022 – present: Organiser of Cambridge's applied and computational analysis seminar series.
- 2023 – present: Part III committee (2025 – present: DAMTP director).
- 2023 – present: Lecturer of NST Part IB: Mathematics, Lecturer of Part III applied and computational analysis course.
- Conducted supervisions in several courses, including in: approximation theory, complex analysis/methods, data science, functional analysis, machine learning, numerical analysis, linear algebra.

Leadership and service roles (including editorial)

- Lead organiser of upcoming Isaac Newton Institute programme, *"Operator Theory for Dynamical Systems"*.
- Organising committee of *Deep learning, Dynamical systems and Data* conference, March 2024, UK.
- Organiser of minisymposia in data science at several international conferences.
  E.g., SIAM LA24, SIAM DS25, GAMM Annual Conference 2026.
- 2025 – present: Associate Editor of **IMA Journal of Applied Mathematics**.
- 2025 – present: Guest Editor of **Systems & Control Letters**.
- 2021/2022: Co-organiser (and co-founder) of École Normale Supérieure's data science seminar series.

Lecture courses I have written (lecture notes available upon request)

- "*Spectral Computations in Infinite Dimensions*," University of Cambridge 2024 – present.
- "*Data-driven approximations of Koopman operators for dynamical systems*," École Normale Supérieure 2022.
- "*To infinity and beyond! A course on infinite-dimensional spectral computations*," Gran Sasso Science Inst. 2022.
- "*On the barriers of AI and the trade-off between stability and accuracy*," 21st Geilo Winter School 2021.

Research supervision

PhD students

- George Coote, graduates 2027.
- Gustav Conradie, graduates 2027.
- April Herwig, graduates 2028.
- Kelan Gray, graduates 2028.

Postdocs

- Alexei Stepanenko, 2023–2024.
- Joshua Bannister, 2024.

Mentored students

- Luca Gazdag (University of Oslo), graduated 2024.
- Alistair Hales (University of Cambridge), graduated 2024.
- Emil Haugen (University of Oslo), *Master's Prize 2022* for best mathematics master's thesis at UiO & NTNU.
- Shiza Naqvi (University of Cambridge), graduates 2025.
- Paula Lorenzo Sánchez (University of Bologna), visiting on a *David Crighton Fellowship*, graduated 2025.
- James Chok (University of Edinburgh), graduates 2026.
- Sina Mohammad–Taheri (Concordia University), visiting on a *Mitacs Globalink Research Award*, graduates 2026.
- Iryna Burak (Technical University of Munich), visiting on a *David Crighton Fellowship*, graduates 2026.

Selected presentations at conferences and workshops

- **Invited Masterclass:** Statistical Properties and Extremes in Dynamical Systems — January 2026.
- **Invited Plenary Speaker:** Statistical Mechanics of the Climate System and of Ecosystems, Leicester — July 2025.
- **Invited Plenary Speaker:** Hidden Structures in Dynamics, Optimization, & ML, L'Aquila — May 2025.
- SIAM Conference on Applications of Dynamical Systems, Denver — May 2025.
- Mini-Workshop: Geometric Integration, Cambridge — February 2025.
- Data-driven Modeling, Analysis, and Control of Dynamical Systems, Oberwolfach — December 2024.
- SIGMA, Centre International de Rencontres Mathématiques — October 2024.
- Mathematical Theory of Networks and Systems, Cambridge — August 2024.
- *Minicourse:* Mathematical Theory of Networks and Systems, Cambridge — August 2024.
- International Workshop on Operator Theory and its Applications, Kent — August 2024.
- Fourth Symposium on Machine Learning and Dynamical Systems, The Fields Institute — July 2024.
- British Mathematical Colloquium, University of Manchester — June 2024.
- Koopman Operator Theory: Fundamentals, Approximations and Applications, Otranto — May 2024.
- SIAM Conference on Applied Linear Algebra, Paris — May 2024.
- Exploiting Algebraic and Geometric Structure in Time-Integration Methods, Pisa — April 2024.
- PDE meets Data: Challenges and perspectives in model development and calibration, Warwick — September 2023.
- International Congress on Industrial and Applied Mathematics, Tokyo — August 2023.
- Numerical Analysis in the 21st Century, Oxford — August 2023.
- Complex analysis: techniques, applications and computations, Isaac Newton Institute — July 2023.
- 29th Biennial Numerical Analysis Conference — June 2023.
- **Leslie Fox Prize Lecture** — June 2023.
- Foundations of Computational Mathematics — June 2023.
- **10th Popov Prize Lecture, Invited Semi-plenary:** Foundations of Computational Mathematics — June 2023.
- SIAM Conference on Applications of Dynamical Systems, Portland — May 2023.
- **Invited Plenary Speaker:** Differential-Algebraic Equations and Operator Pencils, BIRS — April 2023.
- Mathematical theory and applications of multiple wave scattering, Isaac Newton Institute — March 2023.
- SIAM Conference on Computational Science and Engineering, Amsterdam — March 2023.
- Joint Mathematics Meeting, Boston — January 2023.
- CMStatistics 2022, King's College London — December 2022.
- SIAM Conference on Mathematics of Data Science, San Diego — September 2022.
- Third Symposium on Machine Learning and Dynamical Systems, The Fields Institute — September 2022.
- IMA Conference on The Mathematical Challenges of Big Data, University of Oxford — September 2022.
- AIM Workshop: Computational mathematics in computer assisted proofs — September 2022.
- SIAM Conference on Nonlinear Waves and Coherent Structures, University of Bremen — August 2022.

- 27th Summer School on Dynamical Systems and Complexity, Chania, Crete — July 2022.
- **Invited Plenary Speaker:** 30th Birthday of Acta Numerica Conference, Bedlewo — June–July 2022.
- **Invited Plenary Speaker:** XXI Householder Symposium on NLA, Sierra Silvana — June 2022.
- Numerical Methods for Compression and Learning, L'Aquila — May 2022.
- Isaac Newton Institute workshop on the mathematics of deep learning — October 2021.
- International Workshop on Operator Theory and its Applications (IWOTA) — August 2021.
- AIAA Aviation $\times 2$ — August 2021.
- SIAM Annual Meeting — July 2021.
- International Conference on Spectral High Order Methods (ICOSAHOM) $\times 2$ — July 2021.
- **Lighthill–Thwaites Prize Lecture:** BMC and BAMC — April 2021.
- Early Career Applied Mathematics Meeting — March 2021.
- Annual Meeting of the Australian Mathematical Society — December 2020.
- Canadian Mathematical Society Winter Meeting — December 2020.
- Computational Techniques and Applications Conference, **Prize:** Selected as highly commended — September 2020.
- British Early Career Mathematicians' Colloquium — July 2020.
- Isaac Newton Institute workshop on complex analysis — December 2019.
- Isaac Newton Institute workshop on the Wiener–Hopf technique — August 2019.
- Applied Inverse Problems Conference (AIP) — July 2019.
- 28th Biennial Numerical Analysis Conference — June 2019.
- Oxford-Cambridge Applied Mathematics Meeting — June 2019.
- Isaac Newton Institute workshop on the mathematics of deep learning and data science — May 2019.
- British Applied Mathematics Colloquium (BAMC) — April 2019.
- Measuring the Complexity of Computational Content (Dagstuhl) — September 2018.

Seminar talks

- Mathematics Seminar, University of New South Wales — January 2026.
- CCMI Seminar, Imperial College London — December 2025.
- Numerical Analysis and Scientific Computing Seminar, University of Manchester — November 2025.
- Mathematics Seminar, Washington University in Saint Louis — September 2025.
- Mathematics Seminar, Simons Institute for the Theory of Computing, Berkeley — September 2025.
- Mathematics Colloquium, University of Arizona — August 2025.
- Analysis Seminar, Yale University — May 2025.
- Scientific Computation Seminar, Center for Computational Mathematics, Flatiron Institute — May 2025.
- Mathematics Seminar, Washington State University Vancouver — March 2025.
- Analysis Seminar, University of Reading — February 2025.
- Applied and Interdisciplinary Mathematics Seminar, University of Bath — February 2025.
- Centro Euro-Mediterraneo sui Cambiamenti Climatici, University of Bologna — November 2024.
- Complex Systems Seminar, Technical University of Munich — June 2024.
- Machine Learning and Dynamical Systems Seminar, Alan Turing Institute — May 2024.
- Applied and Computational Mathematics Seminar, University of Edinburgh — February 2024.
- Centre for Complex Systems, Queen Mary University of London — February 2024.
- Joint Numerical Analysis and Applied Mathematics Seminar, University of Birmingham — September 2023.
- Imperial–UCL Numerics Seminar, Imperial College London — May 2023.
- eBrain Lab Seminar, Simon Fraser University — March 2023.
- G-34 Artificial Intelligence in Aviation Committee, online — February 2023.
- Applied and Computational Mathematics Seminar, University of Wisconsin–Madison — December 2022.
- PDEs Seminar, MIT — November 2022.
- Applied and Computational Mathematics Seminar, Dartmouth — November 2022.
- Mathematics Colloquium, Virginia Tech — November 2022.
- Aerospace and Ocean Engineering Seminar, Virginia Tech — November 2022.
- Mathematics Seminar, University of Washington — October 2022.
- Applied Mathematics Seminar, UC Berkeley — October 2022.
- Computational Mathematics Seminar, Caltech — October 2022.
- Applied and Computational Math Seminar, University of Minnesota — October 2022.
- MATHICSE Seminar, École Polytechnique Fédérale de Lausanne — June 2022.
- AudioVisual Communications Group Seminar, École Polytechnique Fédérale de Lausanne — June 2022.
- One World Seminar Mathematics of Machine Learning Seminar, online — May 2022.
- Applied and Computational Analysis Seminar, University of Cambridge — May 2022.
- Analysis & PDE Seminar, Cardiff University — March 2022.

- Numerical Analysis and Scientific Computing, University of Manchester — March 2022.
- Applied Mathematics Seminar, University of Warwick — March 2022.
- One World Optimization Seminar, online — February 2022.
- EMC2 Seminar, Ecole des Ponts — February 2022.
- One World Numerical Analysis Seminar, online — February 2022.
- Differential Equations, Numerical Analysis and Applications Seminar, University of Málaga — February 2022.
- Dynamical Systems and Nonlinear Control Seminar, UC Santa Barbara — December 2021.
- Quantitative Analysis and Verification Seminar, University of Oxford — December 2021.
- Numerical ODEs, Matrix Analysis and Data Science Seminar, Gran Sasso Science Institute — December 2021.
- Computational Mathematics and Applications Seminar, University of Oxford — November 2021.
- Scientific Computing and Numerics Seminar, Cornell University — November 2021.
- Machine Learning + X Seminar, Brown University — June 2021.
- Mathematical Foundations of Artificial Intelligence Seminar, LMU Munich — May 2021.
- Groupe de Travail du LJLL Seminar, Sorbonne Université/Université De Paris — May 2021.
- Mechanics Group Seminar, Cornell University — March 2021.
- Quantum Optics and Quantum Many-body Systems Seminar, University of Strathclyde — March 2021.
- Communications in Numerical Linear Algebra, online — October 2020.
- Collective Phenomena Group Seminar, University Cambridge — June 2020.
- Electronic Structure Group Seminar, University Cambridge — June 2020.
- Waves in Complex Continua, International Centre for Mathematical Sciences — May 2020.
- Applied and Interdisciplinary Mathematics Seminar & Numerical Analysis Seminar, University of Bath — May 2020.
- Applied Mathematics Seminar, UC Berkeley — May 2020.
- Imperial–UCL Numerics Seminar, Imperial College London — May 2019.
- Laplace Seminar Series, École Normale Supérieure — May 2019.
- Biomedical Imaging Seminar, École Polytechnique Fédérale de Lausanne — May 2019.
- Applied Partial Differential Equations Seminar, University of Washington — May 2019.
- Waves Group Seminar, University of Cambridge — February 2019.
- Applied and Computational Mathematics Seminar, UC Irvine — November 2018.
- Analysis and Applied Math Seminar, UC Berkeley — November 2018.
- Scientific Computing and Numerics Seminar, Cornell University — November 2018.

Refereeing service (journals, books, grants, and theses)

ACM Transactions on Mathematical Software, Applied and Computational Harmonic Analysis, Applied Mathematics Letters, Automatica, BIT Numerical Mathematics, Communications on Pure and Applied Mathematics, Computers and Mathematics with Applications, Constructive Approximation, ESAIM: Mathematical Modelling and Numerical Analysis, Forum of Mathematics: Sigma, Foundations of Computational Mathematics, IEEE Signal Processing Magazine, IEEE Transactions on Information Theory, IEEE Transactions on Knowledge and Data Engineering, IEEE Transactions on Pattern Analysis and Machine Intelligence, IEEE Transactions on Signal Processing, IMA Journal of Applied Mathematics, IMA Journal of Numerical Analysis, Inventiones Mathematicae, Information and Inference: a Journal of the IMA, Journal of Aerospace Engineering, Journal of Applied Analysis and Computation, Journal of Approximation Theory, Journal of Computational Dynamics, Journal of Computational Physics, Journal of Fourier Analysis and Applications, Journal of Machine Learning Research, Journal of Scientific Computing, Journal of Spectral Theory, Mathematics of Computation, Mathematical Theory of Networks and Systems, Nature Communications Physics, Nature Scientific Reports, Nonlinearity, Numerical Algorithms, Numerische Mathematik, Philosophical Transactions A, Physica D: Nonlinear Phenomena, Physical Review Letters, Physical Review Fluids, Proceedings of the Royal Society A, Proc. SampTA, SIAM Journal on Applied Dynamical Systems, SIAM Journal on Applied Mathematics, SIAM Journal on Control and Optimization, SIAM Journal on Mathematics of Data Science, SIAM Journal on Matrix Analysis and Applications, SIAM Journal on Numerical Analysis, SIAM Journal on Scientific Computing, SIAM Review, Studies in Applied Mathematics, Systems & Control Letters, Zeitschrift für Naturforschung A, Cambridge University Press (*for a book*), Austrian Science Fund (*for grant*), Georg Nemetschek Institute (GNI) Artificial Intelligence (*for grant*), Willem Diepeveen (*thesis*), Sidney Holden (*thesis*), Davide Murari (*thesis*), Hong Ye Tan (*thesis*).