

# Georg Maierhofer

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## Professional Experience

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Nov. 2023 - **Henslow Research Fellow and Director of Studies (since Oct. 2025)**  
present Clare Hall, University of Cambridge, UK  
Mar. 2024 - **Hooke Research Fellow**  
Mar. 2025 Mathematical Institute, University of Oxford, UK  
May 2022 - **Marie Skłodowska-Curie Postdoctoral Fellow**  
Oct. 2023 Laboratoire Jacques-Louis Lions, Sorbonne Université, France  
Sep. 2021 - **Postdoctoral Researcher**  
Apr. 2022 Laboratoire Jacques-Louis Lions, Sorbonne Université, France  
Research within ERC Starting Grant ‘LAHACODE’ supervised by Prof. Katharina Schratz

## Education

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Oct. 2017 - **PhD in Applied Mathematics, at the Cambridge Centre for Analysis**  
Aug. 2021 Trinity College, University of Cambridge, UK  
Supervisors: Prof. Nigel Peake and Prof. Arieh Iserles  
Oct. 2013 - **University of Cambridge, Trinity College, UK**  
Jun. 2017 BA & MMath (hons) in Mathematics  
- MMath (Part III): Distinction (ranked within top 7.5% of all students)  
- BA (Part II): First Class

## Grants and Fellowships

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### Major Fellowships

2023-present **Henslow Fellowship**, Cambridge Philosophical Society  
2024-2025 **Hooke Research Fellowship**, University of Oxford  
2022-2023 **Marie Skłodowska-Curie Postdoctoral Fellowship (MSCA)**, European Commission  
- Ranked within top 7% of 163 proposals in the subject area Mathematics submitted across the EU  
Jan. 2022 **MathInGreaterParis Fellowship**, Fondation Sciences Mathématiques de Paris, France  
- Funding for 2-year fellowship, declined in favour of MSCA

### Medium-sized Grants

2027-2029 **General Research Fund (GRF)** (Co-Investigator with Jianbo Cui at PolyU), Hong Kong RGC  
2027-2028 **International Exchanges Grant** (with Elad Hazan at Princeton), Royal Society  
2025 **Scientific High Level Visiting Fellowship**, French Embassy in the UK

### Smaller Grants and Awards

Jul. 2024 **Scheme 7 Grant**, London Mathematical Society  
2018-2025 **Multiple small travel awards**, Cambridge Philosophical Society, Czech Academy of Sciences, IMA, LMS, Trinity College, University of Oxford...  
Aug. 2023 **Full financial support**, ICIAM 2023, Japan  
Mar. 2020 **Rouse Ball Travelling Studentship in Mathematics**, Trinity College, Cambridge  
Jun. 2016 **Undergraduate Research Bursary**, London Mathematical Society

## Awards and Honors

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Mar. 2026 **Finalist at STEM for Britain**, UK Parliament  
Jul. 2025 **Spotlighted paper**, International Conference on Machine Learning, Vancouver, Canada  
- Top 2.6% of 12,107 submissions; joint lead author  
Jun. 2025 **Leslie Fox Prize for Numerical Analysis (2nd prize)**, IMA, UK  
- One of the leading international awards for rising stars in computational mathematics  
Feb. 2023 **Challenge winner**, SIAM CSE Hackathon, Netherlands  
Dec. 2021 **Junior research leader of Simons Semester**, Polish Academy of Sciences

- Mar. 2021 **SIAM CS&E BGCE Prize Finalist**, BGCE, Germany
- 2017-2021 **Research Scholarship**, Trinity College, University of Cambridge, UK  
- Awarded for examination excellence to only 25 of over 300 graduate students in the College.
- Mar. 2019 **Smith-Knight and Rayleigh-Knight Prize**, University of Cambridge, UK  
- Recognises outstanding early-career research; ranked joint second among over 20 entries.
- 2014, 2016 **Junior & Senior Scholarship**, Trinity College, University of Cambridge, UK
- Nov. 2015 **Winner TakeAIM competition**, Smith Institute, UK  
- First prize out of roughly 60 entries

## Publications

**1 book** (*Physics-Informed AI*, in preparation) and **31 manuscripts** with 60+ collaborators across 40+ institutions. *Note:* In numerical analysis, author order is conventionally alphabetical and does not indicate contribution; lead-author publications are therefore marked with an asterisk (\*). In machine learning, peer-reviewed conference proceedings (ICML, NeurIPS, ICLR) are top-tier publication venues of the field.

- [32] Kutz, J. N., Bakarji, J., Cranmer, M., Germany, J., Goldfeder, J., **Maierhofer, G.**, Riva, S., Rude, A., Tomasetto, M., Williams, J., Wyder, P., Yermakov, A., Zhao, Y. Physics-Informed AI. *Upcoming book*.
- [31\*] **Maierhofer, G.**, Mukhopadhyay, P., Cranmer, M. Separable Message Passing Neural Network Encoders for Physics Simulations. *In preparation*.
- [30] Hashemi, B., **Maierhofer, G.**, Nakatsukasa, Y. Fast adaptive Levin quadrature based on the Sherman–Morrison–Woodbury formula. *In preparation*.
- [29] Jin, T., **Maierhofer, G.** Relaxation-based energy-preserving low-regularity integrators for the nonlinear Schrödinger equation. *In preparation*.
- [28\*] **Maierhofer, G.** Physics-informed reduced-order modelling with equivariant spectral submanifolds. *Under review*.
- [27] Webb, M., **Maierhofer, G.** Stable Hermite transforms via the Golub–Welsch algorithm. *Under review*.
- [26] Riva, S., Introini, C., Cammi, A., Price, D., Yermakov, A., Zhao, Y., Wyder, P. M., Goldfeder, J., Williams, J., Rude, A. S., Tomasetto, M., Germany, J., Bakarji, J., **Maierhofer, G.**, Cranmer, M., Kutz, J. N. CTF4Nuclear: Common Task Framework for Nuclear Fission and Fusion Models. *Under review*.
- [25\*] Banica, V., **Maierhofer, G.**, Schratz, K. Computing nonlinear Schrödinger equations with Hermite functions beyond harmonic traps. *Under review*.
- [24] Cui, J., **Maierhofer, G.** A Wong–Zakai resonance-based integrator for the nonlinear Schrödinger equation with white noise dispersion. *Under review*.
- [23] Faou, E., **Maierhofer, G.**, Schratz, K. (2026). Fully discrete backward error analysis for the midpoint rule applied to the nonlinear Schrödinger equation. *Numerische Mathematik*.
- [22] Carles, R., **Maierhofer, G.** (2026). On scattering for NLS: rigidity properties and numerical simulations via the lens transform. *Mathematical Models and Methods in Applied Sciences*.
- [21] Yermakov, A., Zhao, Y., Denolle, M., Ni, Y., Wyder, P. M., Goldfeder, J., Riva, S., Williams, J., Zoro, D., Rude, A. S., Tomasetto, M., Germany, J., Bakarji, J., **Maierhofer, G.**, Cranmer, M., & Kutz, J. N. The Seismic Wavefield Common Task Framework. *ICLR 2026*.
- [20] Alama Bronsard, Y., Bruned, Y., **Maierhofer, G.**, Schratz, K. (2025). Symmetric resonance based integrators and forest formulae. *Foundations of Computational Mathematics*.
- [19] Ballyk, B., Gupta, A., Konda, S., Subramanian, K., Landon, C., Naseer, A., **Maierhofer, G.**, Swaminathan, S., Venkateshwaran, V. Privacy-preserving Generative Modeling and Clinical Validation of Longitudinal Health Records for Chronic Disease. *ML4H 2025*.
- [18] Wyder, P., Goldfeder, J., Yermakov, A., Zhao, Y., Riva, S., Williams, J., Zoro, D., Rude, A., Tomasetto, M., Germany, J., Bakarji, J., **Maierhofer, G.**, Cranmer, M., Kutz, J. N. Common Task Framework For a Critical Evaluation of Scientific Machine Learning Algorithms. *NeurIPS 2025*.
- [17\*] Rowbottom, J., **Maierhofer, G.**, Deveney, T., Mueller, E., Paganini, A., Schratz, K., Lio, P., Schönlieb, C.-B., Budd, C. (2025). G-Adaptivity: optimised graph-based mesh relocation for finite element methods; joint first author. *ICML spotlight*.
- [16\*] **Maierhofer, G.**, Schratz, K. (2025). Bridging the gap: symplecticity and low regularity in Runge–Kutta resonance-based schemes. *Mathematics of Computation (Leslie Fox Prize 2025)*.
- [15\*] Iserles, A., **Maierhofer, G.** (2025). An accelerated Levin–Clenshaw–Curtis method for the evaluation of highly oscillatory integrals. *BIT Numerical Mathematics*.
- [14\*] Feng, Y., **Maierhofer, G.**, Wang, C. (2025). Explicit symmetric low-regularity integrators for the nonlinear Schrödinger equation. *SIAM Journal on Scientific Computing*.

- [13] Jin, T., **Maierhofer, G.**, Schratz, K., Xiang, Y. (2025). A fast neural hybrid Newton solver adapted to implicit methods for nonlinear dynamics. *Journal of Computational Physics*.
- [12] Feng, Y., **Maierhofer, G.**, Schratz, K. (2024). Long-time error bounds of low-regularity integrators for nonlinear Schrödinger equations. *Mathematics of Computation*.
- [11\*] Banica, V., **Maierhofer, G.**, Schratz, K. (2024). Numerical integration of Schrödinger maps via the Hasimoto transform. *SIAM Journal on Numerical Analysis*.
- [10\*] **Maierhofer, G.**, Iserles, A., Peake, N. (2022). Recursive moment computation in Filon methods and application to high-frequency wave scattering in two dimensions. *IMA Journal of Numerical Analysis*.
- [9\*] **Maierhofer, G.**, Huybrechs, D. (2022). An analysis of least-squares oversampled collocation methods for compactly perturbed boundary integral equations in two dimensions. *Journal of Computational and Applied Mathematics*.
- [8\*] **Maierhofer, G.**, Huybrechs, D. (2022). Convergence analysis of oversampled collocation boundary element methods in 2D. *Advances in Computational Mathematics*.
- [7\*] **Maierhofer, G.**, Peake, N. (2022). Acoustic and hydrodynamic power of wave scattering by an infinite cascade of plates in mean flow. *Journal of Sound and Vibration*.
- [6\*] **Maierhofer, G.**, Peake, N. (2020). Wave scattering by an infinite cascade of non-overlapping blades. *Journal of Sound and Vibration*.
- [5] Sherry, F., Benning, M., De los Reyes, J. C., Graves, M. J., **Maierhofer, G.**, Williams, G., Schönlieb, C.-B. and Ehrhardt, M. (2020). Learning the Sampling Pattern for MRI. *IEEE Trans. Med. Imaging*.
- [4] Heydecker, D., **Maierhofer, G.**, Aviles-Rivero, A. I., Fan, Q., Chen, D., Schönlieb, C.-B. and Süsstrunk, S. (2019). Mirror, Mirror, on the Wall, Who's Got the Clearest Image of Them All? - A Tailored Approach to Single Image Reflection Removal. *IEEE Transactions on Image Processing*.
- [3\*] **Maierhofer, G.**, Heydecker, D., Aviles-Rivero, A. I., Alsaleh, S. M., Schönlieb, C.-B. (2018). Peekaboo - Where are the objects? Structure adjusting superpixels. *Proc. 25th IEEE Int. Conf. Image Process.*
- [2] Foster, A., Li, H., **Maierhofer, G.**, Shearer, M. (authors contributed equally, 2016). An extension of standard Latent Dirichlet Allocation to multiple corpora. *SIAM Undergraduate Research Online Volume 9*.
- [1] Hernandez Palomares, R., Hu, E., **Maierhofer, G.**, Rao, P. (authors contributed equally, 2015). Geometric Measure of Arens Irregularity. *Fields Institute USRP Report*.

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## Teaching and Supervision

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### Mentoring of PhD students

- 2026-present Mr Alan Muriithi (current PhD student at the University of Oxford)
- 2023-present Mr James Rowbottom (current PhD student at the University of Cambridge)
- 2023-25 Dr Tianyu Jin (now Postdoctoral Researcher, RWTH Aachen)
- 2021-24 Dr Yvonne Alama Bronsard (now NSF Postdoctoral Fellow, MIT)
- 2021-23 Dr María Cabrera Calvo

### Master's dissertation supervision

- 2025/26 Moonis Haider, Jonathan Kelly & Theeran Ramanan: *Principled Approaches to Score Matching in Diffusion Models*
- 2024/25 Penelope Forcioli (now MSc, Paris Dauphine), Moritz Hauschulz (now PhD, Oxford), Ade Olugboji (now Citadel), Johan Slettengren (now MSc, KTH), Emre Ulusoy (now PhD, Imperial College) & Zihan Zhou: *Structure-preserving operator learning*
- 2024 Benjamin Ballyk (now PhD, Oxford): *Deep generative modelling for synthesising longitudinal health data*
- 2023 Qinyan Zhou (now PhD, ENSTA Sorbonne): *Neural operators for fast computation of nonlinear frequency interactions in dispersive equations*

### Undergraduate internship supervision

- 2026 Jiya Dhoot & Matthew Gillow: *Parametric generalisation of Koopman operators*

### Teaching at Bachelor's and Master's level

- 2018-present > 8 years of experience at various levels and group sizes including:
- 1-on-2 tutorial teaching at the University of Cambridge;
  - Small group teaching (15-20 students) at the University of Oxford and Sorbonne Université;
  - Support with lecture course and exam design at Sorbonne Université;
  - Lectures in *Theories of Deep Learning* and *Scientific Machine Learning* (approx. 50 students) at University of Oxford and University of Cambridge.

Courses include: *Theories of Deep Learning*, *Fundamentals of Numerical Methods*, *Distribution Theory*, *Asymptotic Methods*, *Differential Equations*, and *Numerical Analysis II*

## Academic Service

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|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Jan. 2024 - present   | <b>Domain expert and group leader: Machine Learning for Differential Equations</b><br>EPSRC Programme Grant on the Mathematics of Deep Learning (Maths4DL) |
| Nov. 2023 - present   | <b>Member of Governing Body and College Council (charity trustee)</b><br>Clare Hall, University of Cambridge                                               |
| Oct. 2019 - Oct. 2024 | <b>Group coordinator and Early Career Representative</b><br>Special Interest Group for Mathematical Analysis in Acoustics, UK Acoustics Network            |
| Nov. 2023 - present   | <b>Seminar organiser</b><br>Applied and Computational Mathematics Group Seminar, University of Cambridge                                                   |
| Nov. 2022 - Oct. 2023 | <b>Postdoc representative</b><br>Member of the departmental board, Laboratoire Jacques-Louis Lions, Sorbonne Université                                    |
| Jul. 2022 - Aug. 2023 | <b>Co-organiser of contributed Minisymposia</b><br>SciCADE 2022 & ICIAM 2023                                                                               |
| Apr. 2022 - present   | <b>Reviewer for scientific journals</b><br>Reviewer for most of the major journals in Numerical Analysis                                                   |

## Selected Invited Presentations

|           |                                                                                             |
|-----------|---------------------------------------------------------------------------------------------|
| Sep. 2026 | Invited speaker at biennial Prob_AI Hub workshop, Manchester, UK                            |
| Jul. 2026 | Invited minisymposium speaker at FoCM 2026, Vienna, Austria                                 |
| Jun. 2026 | Invited minisymposium speaker at SciCADE 2026, Edinburgh, UK                                |
| May. 2026 | Invited talk at InstaDeep Ltd, London, UK                                                   |
| Sep. 2025 | IDEFIX group seminar, ENSTA Paris, France                                                   |
| Jan. 2025 | The Edinburgh Analysis Seminar, University of Edinburgh, UK                                 |
| Oct. 2024 | Oberwolfach workshop on Deep Learning for PDE-based Inverse Problems, Germany               |
| Sep. 2024 | Scientific machine learning meeting, University of Bath                                     |
| Sep. 2024 | Séminaire Équations aux Dérivées Partielles et Applications, Université de Lorraine, France |
| Aug. 2024 | Workshop on Structure-preserving numerical methods and their applications, Hong Kong PolyU  |
| May 2024  | Workshop on Boundary, Multiscale dynamics, and Stochastic Problems, INRIA Rennes            |
| Apr. 2024 | Modern Methods for Differential Equations of Quantum Mechanics, BIRS, Canada                |
| Jan. 2024 | IMS Young Mathematical Scientist Forum, NUS, Singapore                                      |
| Aug. 2023 | Invited minisymposium speaker at ICIAM 2023, Tokyo, Japan                                   |

## Industrial and Consultancy Experience

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|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
| May 2026 - present     | <b>Industrial Collaboration (InstaDeep Ltd)</b><br>Industrial collaboration on generative models for biomedical applications                              |
| Jan. 2026 - Apr. 2026  | <b>Joint Hackathon Organisation (National Air Traffic Services)</b><br>Lead organiser of industrial hackathon on optimal control and SciML                |
| Jan. 2024 - Sept. 2024 | <b>Industrial MSc supervision (Vironix Health, Inc.)</b><br>Joint supervision of Benjamin Ballyk (University of Oxford) on an industry-linked MSc project |

## Public Engagement and Outreach Activities

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|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Jun. 2025 | <b>Brainstorming AI with Maths4DL</b><br>Podcast with Plus Magazine recorded as main organiser of Maths4DL hackathon in Cambridge<br><i>&gt;1,500 listens worldwide</i>                                     |
| Dec. 2024 | <b>AI goes to physics class</b><br>Outreach article by Plus Magazine on physics-informed machine learning for scientific computing<br><i>&gt;2,000 pageviews worldwide</i>                                  |
| Apr. 2024 | <b>How physics can help AI learn about the real world</b><br>Podcast with Plus Magazine explaining SciML to a broad audience<br><i>&gt;1,500 listens worldwide</i>                                          |
| Jul. 2023 | <b>Res.-based schemes for low-regularity simulations of dispersive eqns and beyond</b><br>Article for the European Community on Computational Methods in Applied Sciences newsletter with Katharina Schratz |

## Computing skills

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|---------------|--------------------------------|
| Advanced:     | Python, PyTorch, Matlab, LaTeX |
| Intermediate: | Julia, Mathematica, CUDA       |
| Basic:        | C, C++                         |

## Languages

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| English: | Fluent                   |
| German:  | Mother tongue            |
| French:  | Intermediate proficiency |