

Patrick E. Farrell

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Employment history

- 2016–date **Associate Professor**, Mathematical Institute, University of Oxford.
- 2016–date **Tutorial Fellow in Applied Mathematics**, Oriel College, University of Oxford.
- 2013–2018 **EPSRC Early Career Research Fellow**, Mathematical Institute, University of Oxford.
- 2013–2016 **Postdoctoral Research Fellow**, Christ Church College, University of Oxford.
- 2012–2017 **Adjunct Research Scientist**, Simula Research Laboratory, Oslo.
- 2010–2013 **Postdoctoral Research Associate**, Earth Science & Engineering, Imperial College London.

Academic history

- 2006–2009 **PhD in Computational Physics**, Imperial College London.
 - Thesis *Galerkin projection of discrete fields via supermesh construction*. Viva: 27 Nov 2009.
 - Prizes Association of Computational Mechanics in Engineering award, 2010; Finalist, European Community on Computational Methods in Applied Sciences award, 2010; Imperial College Research Excellence Award, 2010; Janet Watson award, Imperial College London, 2009.
- 2002–2006 **BSc (Hons) in Mathematics**, National University of Ireland, Galway.
 - Thesis *Cryptographic applications of polycyclic groups*.
 - Prizes Hamilton Prize, Royal Irish Academy, 2006; Blayney Exhibition, National University of Ireland, 2006.

Notable prizes

- 2018 **G-Research DPhil Prize**, £10K awarded to Florian Wechsung for our joint work on preconditioners for the Navier–Stokes equations.
- 2015 **Wilkinson Prize for Numerical Software**, for the development of dolfin-adjoint, with D. A. Ham, S. W. Funke and M. E. Rognes.
- 2015 **Leslie Fox Prize in Numerical Analysis**, second place, for the development of deflation techniques for partial differential equations.

Research funding

- 2019–2020 **Leverhulme Trust Visiting Professorship for Prof. Panayotis Kevrekidis**, VP2-2018-007, £85,390, PI.
- 2018–2023 **PRISM: Platform for Research In Simulation Methods**, EPSRC EP/R029423/1, £1,612,965, Co-I, Platform grant.
- 2015–2018 **A new simulation and optimisation platform for marine technology**, EPSRC EP/M011151/1, £557,545, Co-I, Software for the Future II.
- 2014–2015 **Scalable automated parallel PDE-constrained optimisation for dolfin-adjoint**, EPSRC eCSE02-03, £60,298, PI, Embedded CSE support.

- 2013–2018 **Automating optimisation subject to partial differential equations on high-performance computers**, EPSRC EP/K030930/1, £487,241, PI, Fellowship.
- 2012–2013 **Optimising the layout of tidal turbines for marine renewable energy**, EPSRC, £35,572, Researcher Co-I, Pathways to Impact award.

Teaching

- 2019 **Departmental Teaching Award**, Mathematical Institute, University of Oxford.
- 2017–2021 **C6.4 Finite Element Methods for PDEs**, Mathematical Institute, University of Oxford.
- 2018 **PMR5426 Adjoint for Sensitivity, Optimisation and Control**, Escola Politécnica, Universidade de São Paulo.
- 2017–2018 **PMR5412 Modelling and Numerical Simulation via Variational Calculus**, Escola Politécnica, Universidade de São Paulo.
- 2016–date **Tutorials in Linear Algebra, Geometry, Differential Equations I, Numerical Analysis, Calculus of Variations, Constructive Mathematics**, Oriel College, University of Oxford.
- 2016 **Frontiers in PDE-constrained Optimization**, Institute for Mathematics and its Applications, University of Minnesota.
- 2014 **ANADE Summer School on Receptivity, Sensitivity Analysis and Uncertainty Quantification**, Engineering Department, University of Cambridge.

Research supervision

- PDRA Teresa Kyrke-Smith, Alberto Paganini, Thomas Roy.
- PhD Florian Wechsung, Matteo Croci, Pablo Alexei Gazca Orozco, Hamza Alawiye, Ioannis Papadopoulos, Jingmin Xia, Fabian Laakmann, Francis Aznaran, Alexander van Brunt, Nicolas Boullé, Gonzalo Gonzalez de Diego, Pablo Brubeck.
- MSc 11 students on the Mathematical Modelling and Scientific Computing MSc.

Administrative & editorial activities

- 2021 Lead organiser for *Efficient simulation algorithms for viscoelastic and viscous non-Newtonian fluids*, Banff International Research Station.
- 2019–date Member of the Copper Mountain Conference on Iterative Methods committee.
- 2017–2020 Editor of the SIAM *Fundamentals of Algorithms* book series.
- 2018–date Departmental open access coordinator.
- 2017–date Departmental colloquium organiser.
- 2017–date Numerical analysis representative on the Oxford MSc in Mathematical Sciences committee.
- 2016–date Examiner's committee for the MSc in Mathematical Modelling and Scientific Computing.
- 2015–date Member of the IMA Conference on Numerical Methods for Simulation committee.
- 2013–date Member of the EPSRC Peer Review College, reviewed grants for EPSRC.
- 2013–date PhD examiner for the University of Oxford, Politecnico di Milano, Katholieke Universiteit Leuven, Queen Mary University of London, University of Bath, Imperial College London, Charles University Prague.
- 2010–date Peer reviewer for 15 journals in computational science and engineering.