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.

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 Adjoints 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.