

# Dr Sheehan Shakiban Olver

## Reader

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## RESEARCH INTERESTS

*Spectral methods*: Fast and stable solution of ordinary and partial differential equations and singular integral equations

*Random matrix theory*: Calculating statistics and sampling invariant ensembles, computing equilibrium measures and free probability convolutions

*Orthogonal polynomials and spectral theory*: Calculating spectral measures and operator functions, computing Gaussian quadrature rules, fast transforms

*Integrable systems*: Numerically solving matrix-valued Riemann–Hilbert problems, calculating solutions to the Korteweg–de Vries and nonlinear Schrödinger equations

## DEGREES

Ph.D. in Applied Mathematics, University of Cambridge 2008

Thesis: Numerical Approximation of Highly Oscillatory Integrals

Supervisor: Prof. Arieh Iserles

Defended: 19 May 2008

B.Sc. Summa Cum Laude with High Distinction in Mathematics, Minor in Computer Science, University of Minnesota, Minneapolis 2004

Senior thesis: Constructing grids using a density function to determine concentration

## ACADEMIC POSITIONS

Reader, Imperial College, London 2017

Associate Professor, School of Mathematics and Statistics, The University of Sydney 2016–2017

Senior Lecturer, School of Mathematics and Statistics, The University of Sydney 2014–2015

Lecturer, School of Mathematics and Statistics, The University of Sydney 2011–2013

Postdoctoral Research Fellow, Mathematical Institute, University of Oxford 2011

Visiting Fellow, City University of Hong Kong 2010

Junior Research Fellow, St John's College, Oxford 2007–2011

## AWARDS

ANZIAM Cherry Ripe Prize 2013

Adams Prize (£7,000) 2012

Carl Erik Fröberg Prize (€5,000) 2012

Leslie Fox Prize in Numerical Analysis, Second Prize 2007

Smith Knight/Rayleigh Knight Essay Class 1, University of Cambridge 2006

## SCHOLARSHIPS & GRANTS

Discovery Early Career Researcher Award, Australian Research Council (AUD\$315,640) 2013–2015

AMSI/AustMS Workshop Funding for Sydney Random Matrix Theory Workshop (AUD\$10,450) 2014

International Collaborative Research Award, hosting Peter Miller, The University of Sydney (AUD\$8,900) 2014

IMA Small Grant (£500) 2011

Royal Society International Travel Grant (£1,365) 2009

Gates Scholar, University of Cambridge 2004–2007

## CONFERENCE ORGANIZING

Scientific committee member, Australian Mathematical Society Meeting 2016

Organizing committee member, SIAM Nonlinear Waves and Coherent Structures 2014

Organizer, Sydney Random Matrix Theory Workshop 2014

Co-organizer, NSW/ACT ANZIAM Meeting 2013

Invited workshop organizer, Foundations of Computational Mathematics 2011, 2017

## SOFTWARE

1. `ApproxFun.jl`, a *Julia* package for approximating functions and solving differential equations (with contributions from R.M. Slevinsky, A. Townsend and others)
2. `BandedMatrices.jl`, a *Julia* package for linear algebra with banded matrices (with contributions from others)
3. `SingularIntegralEquations.jl`, a *Julia* package for singular integral equations (developed with R.M. Slevinsky)
4. `RHPackage`, a *Mathematica* package for computing solutions to Riemann–Hilbert problems

## RESEARCH SUPERVISION

Ph.D. supervisor for Ben Snowball 2017

Visiting Ph.D. supervisor for Marcus Webb, Cecil King Travel Scholarship from London Mathematical Society 2016

M.Sc. supervisor for Andrew Swan, The University of Sydney 2015–2016

Visiting Ph.D. supervisor for Richard Mikael Slevinsky, NSERC funded scholarship 2014

## PUBLICATION RECORD

1 Book, “Riemann–Hilbert Problems, Their Numerical Solution and the Computation of Nonlinear Special Functions” co-authored with Thomas Trogdon and published by SIAM in 2015.

30 refereed papers in refereed journals, including high impact journals such as Proc. Nat. Acad. Sci., SIAM Review, and Comm. Pure Appl. Maths.

17 other articles, including refereed conference proceedings, book chapters, and submitted preprints.