

PERSONAL INFORMATION

S2.11 Mathematical Institute Oxford, UK	ORCID: 0000-0001-7934-6618 ResearchGate: Dan J. Hill Scholar: Dan J Hill	📧: danjhill.com ✉: dan.j.hill95@gmail.com Github: Dan-Hill95
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RESEARCH INTERESTS

Applied analysis, dynamical systems, spatial localisation, spatial dynamics, pattern formation.

EDUCATION

- **PhD in Mathematics** University of Surrey, UK
Title: Existence of Small Amplitude Localised Patterns on the Surface of a Ferrofluid October 2017 - June 2021
 - **Supervisors:** David Lloyd and Matthew Turner.
 - **Examiners:** Björn Sandstede (Brown, USA) and Tom Bridges (Surrey, UK).
- **MMath Mathematics (Degree class: First - 86%)** University of Surrey, UK
Title: 3D incompressible Navier-Stokes equations in a thin spherical shell September 2013 - June 2017
 - **Supervisor:** Bin Cheng.

EMPLOYMENT

- **Hooke Fellow** University of Oxford
Oxford, UK September 2025 - Present
- **Retained Lecturer** Jesus College
Oxford, UK October 2025 - Present
- **Alexander von Humboldt Postdoctoral Research Fellow** Saarland University
Saarbrücken, Germany July 2023 - June 2025
 - **Project:** 'A radial reduction theorem for fully-localised planar patterns in quasilinear Partial Differential Equations', with Professor Mark Groves.
- **Postdoctoral Research Assistant** Saarland University
Saarbrücken, Germany January 2022 - June 2023
- **Scientific Consultant** Dr. Luke Roberts
Spatial Awareness Project (Remote) September 2021 - January 2023

FELLOWSHIPS

07/2026 - 06/2029	Postdoctoral Fellowship , EPSRC, UK
09/2025 - 08/2028	Hooke Research Fellowship , University of Oxford, UK
07/2023 - 06/2025	Postdoctoral Research Fellowship , Alexander von Humboldt Foundation, Germany

TEACHING EXPERIENCE

2025	Tutor	'Differential Equations 1 & 2', Jesus College, Oxford
2025	Tutor	'Further Mathematical Biology' and 'Nonlinear Systems, Bifurcations and Chaos', University of Oxford
2023	Lecturer	'Dynamical Systems', Saarland University
2022	Tutor	'Partial Differential Equations', Saarland University
2018-2020	Tutor	'Linear PDEs' and 'ODEs', University of Surrey
2017-2020	Marker	Various courses, including: 'Linear PDEs', 'Ordinary Differential Equations', and 'Mathematical Ecology and Epidemiology'

SUPERVISION

Master's Students

2025/26	Naomi Richards	MSc dissertation, University of Oxford
2025/26	Keira Heslop	MSc dissertation, University of Oxford
2025/26	Abigail Edwards	MSc dissertation, University of Oxford
2025/26	Tahlia Smith	MSc dissertation, University of Oxford
2025/26	Jonathon Wanley	MSc dissertation, University of Oxford
2025/26	Richard Yu	MSc dissertation, University of Oxford
2025/26	Freddie James	MSc dissertation, University of Oxford
2025/26	Huijie Chen	Mathematical Modelling Case Study, University of Oxford
2025/26	Zhuhanling Xiao	Mathematical Modelling Case Study, University of Oxford
2025/26	Xie (Lexi) Wang	Mathematical Modelling Case Study, University of Oxford
2025/26	Lourenco Gomes	Mathematical Modelling Case Study, University of Oxford

PUBLICATIONS

8. J.J. Bramburger, D.J. Hill & D.J.B. Lloyd, *Localized Patterns*, to appear in SIAM Review (2026), 76 pages, arXiv: 2404.14987
7. D.J. Hill & D.J.B. Lloyd, *Radial amplitude equations for fully localised planar patterns*, SIAM J. Appl. Math. **84**, 6 (2024), **21 pages**, doi: 10.1137/24M1644298
6. D.J. Hill, *The role of spatial dimension in the emergence of localised radial patterns from a Turing instability*, Proc. Roy. Soc. A **480**: 20240400 (2024), **25 pages**, doi: 10.1098/rspa.2024.0400
5. D.J. Hill, *Predicting the emergence of localised dihedral patterns in models for dryland vegetation*, J. Nonlinear Sci. **34**, 67 (2024), **39 pages**, doi: 10.1007/s00332-024-10046-2,
4. D.J. Hill, J.J. Bramburger & D.J.B. Lloyd, *Rings of Dihedral Patterns near a Turing Instability*, Nonlinearity **37** (2024), **39 pages**, doi: 10.1088/1361-6544/ad2221
3. D.J. Hill, J.J. Bramburger & D.J.B. Lloyd, *Approximate localised dihedral patterns near a Turing instability*, Nonlinearity **36** (2023), **63 pages**, doi: 10.1088/1361-6544/acc508
2. D.J. Hill, *Existence of localised radial patterns in a model for dryland vegetation*, IMA J. Appl. Math. **87**, 3 (2022), **39 pages**, doi: 10.1093/imamat/hxac007
1. D.J. Hill, D.J.B. Lloyd & M.R. Turner, *Localised Radial Patterns on the Free Surface of a Ferrofluid*, J. Nonlinear Sci. **31**, 79 (2021), **99 pages**, doi: 10.1007/s00332-021-09719-z

Submitted Papers

- [1] M.D. Groves & D.J. Hill, *On function spaces for radial functions* (2024), 47 pages, arXiv: 2403.09372*
- [2] D.J. Hill, *On the interlacing property for zeros of Bessel functions* (2025), submitted to Constr. Approx., 6 pages, arXiv: 2509.24612
- [3] D.J. Hill, D.J.B. Lloyd & M.R. Turner, *Global bifurcation of localised 2D patterns emerging from spatial heterogeneity* (2025), submitted to Nonlinearity, 26 pages, arXiv: 2510.02867

*Will be replaced by M.D. Groves & D.J. Hill, *Function spaces for radial functions* (see below)

Papers in Preparation

- [1] M.D. Groves & D.J. Hill, *Function spaces for radial functions*, to be submitted to Lect. Notes Math., \approx 120 pages
- [2] S. Böhmer, D.J. Hill & D.V. Nilsson, *Solitary axisymmetric capillary waves*, to be submitted to Water Waves, \approx 40 pages

Other Articles

- D.J. Hill & D.J.B. Lloyd, *Approximate Localized Multidimensional Patterns*, SIAM News, 2024, link

TRAVEL GRANTS

- 05/2023 **Travel Support, Society for Industrial and Applied Mathematics** - \$ 500 for travel to SIAM Conference on Applications of Dynamical Systems
- 05/2021 **Student Travel Award, Society for Industrial and Applied Mathematics** - registration waiver for SIAM Conference on Applications of Dynamical Systems
- 07/2020 **LMS Early Research Travel Grant, London Mathematical Society** - £500 for travel to SIAM Conference on Nonlinear Waves and Coherent Structures*
- 07/2020 **FEPS Travel Award, Faculty of Engineering and Physical Sciences, University of Surrey** - £850 for travel to SIAM Conference on Nonlinear Waves and Coherent Structures*
- 08/2019 **FEPS Travel Award, Faculty of Engineering and Physical Sciences, University of Surrey** - £770 for travel to Equadiff
*Unclaimed due to the COVID-19 pandemic


PROFESSIONAL SERVICES

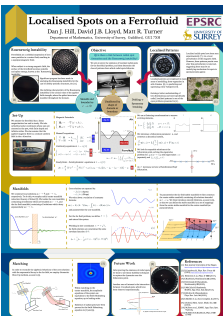
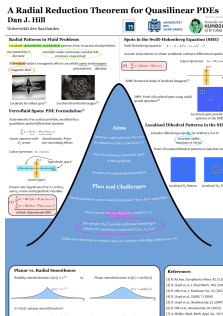
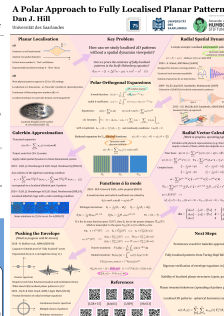
- **Examiner** Thomas 'Jun' Jewell, PhD 'Confirmation of Status' Exam
January 2026
University of Oxford, UK
- **Poster Prize Judge** SIAM Conference on Applications of Dynamical Systems
May 2025
Denver, USA
- **Athena Swan Committee Member** Department of Mathematics
September 2020 - June 2021
University of Surrey, Guildford, UK
- **Postgraduate Researcher Representative** Department of Mathematics
September 2018 - August 2020
University of Surrey, Guildford, UK
- **Postgraduate Student Mentor** Faculty of Engineering and Physical Sciences
September 2018 - August 2019
University of Surrey, Guildford, UK


JOURNALS REFEREED

- Nonlinearity
- Chaos, Solitons and Fractals
- Journal of Nonlinear Science
- New Journal of Physics
- Mathematical Methods in the Applied Sciences
- Mathematical Biosciences
- Journal of the European Mathematical Society
- Electronic Research Archive
- Zeitschrift für Angewandte Mathematik und Physik (ZAMP)
- Journal of Nonlinear Waves
- SIAM Journal on Applied Dynamical Systems
- AMS Mathematical Reviews

GALLERY





ORGANISATION

Minisymposia

- 05/2026 *On the interface: Frontiers in water waves and nonlinear patterns*, **SIAM Conference on Nonlinear Waves and Coherent Structures**, Concordia University, Canada (with M. Groves)
- 03/2026 *The Next Generation: Frontiers in Nonlinear Waves and Pattern Formation*, **British Applied Mathematics Colloquium**, University of East Anglia, UK (with D. Lloyd and A. Champneys)
- 05/2025 *Spatial Localisation: A Global Perspective on Local Phenomena*, **SIAM Conference on Applications of Dynamical Systems**, Denver, USA (with M. Chirilus-Bruckner)
- 05/2023 *Branching out: a new generation's perspective on spatial localisation in higher dimensions*, **SIAM Conference on Applications of Dynamical Systems**, Portland, USA (with P. Subramanian)
- 08/2020 *Localisation in Physical and Biological Applications*, **SIAM Conference on Nonlinear Waves and Coherent Structures**, University of Bremen, Germany* (with M. Groves)

*Conference cancelled due to the COVID-19 pandemic

Seminars

- 09/2025 – **Industrial and Applied Mathematics Seminar**, University of Oxford
- 09/2024 – 06/2025 **Applied Analysis Oberseminar**, Universität des Saarlandes
- 09/2018 – 08/2020 **Postgraduate Research Seminars (PRS)**, University of Surrey
- 09/2018 – 08/2020 **'Taste of Research' Undergraduate Seminars (TORUS)**, University of Surrey

PRESENTATIONS

Seminars

- 03/2026 **Dynamical Systems Seminar**, Leiden University, Netherlands
- 03/2026 **Applied Mathematics Colloquium**, Vrije University, Netherlands
- 03/2026 **Seminar on Analysis, Geometry and PDEs**, Lund University, Sweden
- 02/2026 **Applied Maths Seminar**, University of Warwick, UK
- 01/2026 **Applied Maths Seminar**, Durham University, UK
- 12/2025 **Leeds Applied Nonlinear Dynamics (LAND) Seminars**, University of Leeds, UK
- 10/2025 **Analysis Seminar**, University of Bath, UK
- 10/2025 **Industrial and Applied Mathematics Seminar**, University of Oxford, UK
- 06/2025 **Applied Analysis Seminar**, Saarland University, Germany
- 05/2025 **Seminar**, University of Vienna, Austria
- 10/2024 **Applied Mathematics Seminar**, Concordia University, Canada
- 10/2024 **'Chair for Analysis and Modelling' Seminar**, University of Stuttgart, Germany
- 06/2024 **Seminar Dynamics**, Technical University of Munich, Germany
- 12/2023 **Noncommutative and Functional Analysis Seminar**, Saarland University, Germany
- 10/2023 **Nonlinear Partial Differential Equations Seminar**, KIT, Karlsruhe, Germany
- 10/2023 **Lothar-Collatz Seminar**, Universität Hamburg, Germany
- 10/2023 **Seminar on Applied Dynamical Systems**, Universität Hamburg, Germany
- 12/2022 **Seminar on Analysis, Geometry and PDEs**, Lund University, Sweden
- 07/2022 **Applied Analysis Seminar**, Saarland University, Germany
- 06/2021 **'Nonlinear Waves and Geophysical Fluid Dynamics' Seminar**, Surrey, UK
- 05/2021 **Leeds Applied Nonlinear Dynamics (LAND) Seminars**, University of Leeds, UK
- 10/2020 **Postgraduate Research Seminar**, University of Surrey, UK
- 06/2020 **Waves in One World** (online), One World Seminars
- 05/2020 **'Chair for Analysis and Modelling' Seminar**, University of Stuttgart, Germany
- 05/2020 **Applied Analysis Seminar**, University of Bremen, Germany
- 04/2020 **'Dynamical Systems and PDEs' Research Seminar**, University of Surrey, UK
- 07/2019 **Applied Analysis Seminar**, Saarland University, Germany
- 02/2019 **Postgraduate Researcher Seminar**, University of Surrey, UK

Conferences

- 07/2026 *Minisymposium, 15th AIMS Conference*, Athens, Greece
07/2026 *Minisymposium, Equadiff 2026*, Prague, Czechia
05/2026 *Minisymposium, SIAM NWCS26*, Montreal, Canada
03/2026 *Minisymposium, BAMC*, Norwich, UK
05/2025 *Minisymposium 34, SIAM DS25*, Denver, USA
02/2025 *Minisymposium 10, Wave Phenomena*, Karlsruhe, Germany
01/2025 *'Patterns, Dynamics, and Data...'* (Poster), **ICERM Workshop**, Providence, USA
11/2024 *'Nonlinear Water Waves...'*, **BIRS Workshop**, Banff, Canada
06/2024 *Minisymposium 24, Equadiff*, Karlstad, Sweden
10/2023 *'Order and Randomness...'*, **Research Program**, Mittag-Leffler Institute, Sweden
05/2023 *Minisymposium 88, SIAM DS23*, Portland, USA
04/2023 *'Dynamics of Reaction-Transport Systems' Minisymposium, BAMC*, Bristol, UK
09/2022 **Spatial Dynamics Workshop**, University of Stuttgart, Germany
09/2022 *Minisymposium 36, SIAM NWCS22*, University of Bremen, Germany
08/2021 *Contributed Talk, ICTAM 2020+1*, Online
07/2021 *Contributed Talk, IMA Conference on Nonlinearity...*, Online
05/2021 *Contributed Talk, SIAM DS21*, Online
04/2021 *'Lighthill-Thwaites Prize' Minisymposium, BAMC*, Online
07/2020 *Minisymposium 49, SIAM NWCS20*, University of Bremen, Germany*
01/2020 **Surface and Internal Waves Workshop**, University of Surrey, UK
08/2019 **Equadiff** (Poster), University of Leiden, Netherlands
04/2019 **British Applied Mathematics Colloquium**, University of Bath, UK
**Conference cancelled due to the COVID-19 pandemic*

Outreach

- 12/2020 **'Taste of Research' Undergraduate Seminars (TORUS)**, University of Surrey, UK
03/2020 **Pi Day Mathematics Event**, Duke of Kent School, Ewhurst, UK
11/2019 **Mathematics PhD Open Afternoon**, University of Surrey, UK
07/2019 **Mathematics Widening Participation Summer School**, University of Surrey, UK
07/2019 **Royal Alexandria and Albert School Campus Visit**, University of Surrey, UK
03/2019 **Mathematics Taster Day**, University of Surrey, UK
10/2018 **Mathematics PhD Open Day**, University of Surrey, UK
10/2018 **'Taste of Research' Undergraduate Seminars (TORUS)**, University of Surrey, UK
07/2018 **Mathematics Widening Participation Summer School**, University of Surrey, UK

PUBLICLY AVAILABLE TALKS

- 10/2024 *'Building a round peg: Developing a framework for waves in cylindrical geometries'*, **'Nonlinear Water Waves...'** BIRS Workshop, Banff, Canada, [Link](#)
10/2023 *'Going around in circles: Developing a functional analytic framework for radial solutions to PDEs'*, **'Order and Randomness...'** Research Program, Mittag-Leffler Institute, Sweden, [Link](#)

AWARDS

- 03/2023 **Outstanding Reviewer Award**, Nonlinearity
11/2022 **Trusted Reviewer Status**, IOP Publishing
04/2021 **Finalist for the IMA Lighthill-Thwaites Prize**, BAMC 2021, UK
08/2014 **First Year Departmental Award for Excellent Performance**, University of Surrey, UK