

## DR JOSEPH PAUL MACMANUS

Room 1.20, The Fry Building  $\diamond$  Bristol, BS8 1UG

### EMPLOYMENT

2025 – 2028 Heilbronn Research Fellowship  
University of Bristol

### EDUCATION

2025 DPhil in Mathematics  
St Anne's College, University of Oxford  
Thesis: *Splittings, Tiles, and Planarity*, with Panagiotis Papazoglou

2021 MSc in Mathematics and Foundations of Computer Science  
Balliol College, University of Oxford  
with Distinction

2020 BSc in Mathematics and Computer Science  
University of Bristol  
with First Class Honours

2017 Ysgol Aberconwy Sixth Form

2017 Coleg Llandrillo

### SCHOLARSHIPS, GRANTS, AND PRIZES

2023 – 2025 Graduate Development Scholarship — St Anne's College, Oxford

2021 – 2025 HDP Scholarship — Heilbronn Institute for Mathematical Research

2020 Postgraduate Grant — The James Pantyfedwen Foundation

2020 Graphcore Prize — University of Bristol

2019 Top Student in 2nd Year Maths and Comp Sci. — University of Bristol

2019 Undergraduate Summer Research Bursary — University of Bristol

### TEACHING EXPERIENCE

Upcoming Graduate Lecture Course — Taught Course Centre  
*Topic:* Coarse Graph Theory.  
*Bath, Bristol, Oxford, Warwick, & Swansea Universities, and Imperial College London.*

2023 – 2025 Tutor — University of Oxford  
*Subjects taught:*  
- M1 Linear Algebra I, II,  
- M1 Groups and Group Actions,  
- M2 Analysis I, II, III,  
- M4 Geometry (Revisions),  
- A2.1 Metric Spaces,  
- A3 Rings and Modules (Revisions),  
- A5 Topology,  
- ASO Group Theory,  
- C2.4 Infinite Groups,  
- C3.2 Geometric Group Theory (Consultation sessions).  
*Merton, The Queen's, & St Anne's Colleges, and Intercollegiate.*

2021 – 2023 Teaching Assistant — University of Oxford

*Subjects taught:*

- B3.5 Topology & Groups,
- C3.2 Geometric Group Theory,
- B1.2 Set Theory;
- M4 Geometry,
- A3 Rings and Modules,
- A5 Topology.

*The Queen's College, and Intercollegiate.*

2019 – 2020 Teaching Assistant — University of Bristol

*Subjects taught:*

- Algorithms,
- Data Structures & Algorithms,
- Combinatorics.

## OUTREACH TEACHING

2024 Fibonacci Programme — Balliol College, Oxford

*Topics:*

- Symmetry Groups,
- Theory of Computation,
- MAT Workshop,
- Eigenvalues and Linear Algebra,
- Hamming Codes.

2023 Monday Maths — Balliol College, Oxford

2021 UNIQ Summer School — University of Oxford

## STUDENT SUPERVISION

2025 Arya Saranathan - Undergraduate Summer Research Project

Co-supervised with Davide Spriano

## PREPRINTS

- [1] Heim, P., MacManus, J., Mineh, L. (2026). Realising all countable groups as QI groups. *Submitted*.
- [2] MacManus, J. (2025). Vertex-transitive graphs with uniformly bisecting quasi-geodesics. *Submitted*.
- [3] MacManus, J. (2024). A note on quasi-transitive graphs quasi-isometric to planar (Cayley) graphs. *Preprint*.
- [4] Baligács, J., MacManus, J. (2024). The metric Menger problem. *Preprint*.
- [5] MacManus, J. (2023). Accessibility, planar graphs, and quasi-isometries. *Submitted*.

## PUBLICATIONS

- [1] MacManus, J. P., Mineh, L. (2026). Tiling in some nonpositively curved groups. To appear in *Transactions of the American Mathematical Society*.
- [2] MacManus, J. P. (2025). Fat minors in finitely presented groups. *Combinatorica*, 45(4), 40.
- [3] MacManus, J. P. (2024). Deciding if a hyperbolic group splits over a given quasiconvex subgroup. *Groups, Geometry, and Dynamics* (published online first).

- [4] Alexandru, C. -M., Bridgett-Tomkinson, E., Linden, N., MacManus, J., Montanaro, A., & Morris, H. (2020). Quantum speedups of some general-purpose numerical optimisation algorithms. *Quantum Science and Technology*, 5(4), 045014.

## INVITED CONFERENCE TALKS

1. Workshop on the Coarse Geometry of Groups and Spaces, ICMS, Edinburgh (Upcoming, July 2027) — *TBC*
2. AMS Sectional Meeting, North Dakota State University (Upcoming, April 2026) — *Monotileable groups*
3. World of Geometric Group Theory IV, Online (September 2024) — *Coarsely characterising planarity in Cayley graphs*

## CONTRIBUTED CONFERENCE TALKS

1. *Tilings in groups* — ITMAIA, University of Exeter (February 2024).
2. *Characterising surface groups* — ECSTASy, University of Southampton (August 2023).
3. *Understanding limit sets via finite automata* — PGTC, Heriot-Watt University (July 2023).

## EXTERNAL SEMINAR TALKS

1. Isaac Newton Institute, Cambridge, OGG Colloquium (November 2025) — *All countable groups are full QI-groups*
2. Jagiellonian University, Theoretical Computer Science Seminar (April 2025) — *Asymptotic minors of Cayley graphs*
3. ICMAT, Madrid, Group Theory Seminar (March 2025) — *Coarse characterisations of planarity in Cayley graphs*
4. University of Bristol, Geometry and Topology Seminar (October 2024) — *Coarse characterisations of planarity in Cayley graphs*
5. University of Warwick, Geometry and Topology Seminar (February 2024) — *Groups quasi-isometric to planar graphs*
6. University of Cambridge, Junior Geometry Seminar (April 2023) — *Splitting detection, and limit set complements*
7. University of Bristol, Junior Geometry Seminar (February 2023) — *Will it split? Recognising edge groups in hyperbolic groups*

## OTHER ACTIVITIES

Ongoing    Reviewer:

*Journals:*

- Journal of Combinatorial Theory, Series B,
- Electronic Journal of Combinatorics.

2022 – 2024    Admissions Interviewer — University of Oxford

*Colleges:*

- St Anne's College,
- St Edmund Hall.

2022 – 2023 Seminar Organiser — University of Oxford  
Junior Topology and Group Theory

2021 Maths Admissions Test (MAT) Marker — University of Oxford