

Dr. Gregory Patchell

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ACADEMIC EMPLOYMENT

University of Oxford, Oxford, UK

August 2025 – August 2026

Postdoctoral Research Associate

Mentors: Stuart White and Dawid Kielak

EDUCATION

University of California San Diego

September 2019 – June 2025

PhD in Mathematics

Advisor: Adrian Ioana

University of Waterloo

September 2015 – April 2019

BMath in Pure Mathematics

HONORS AND AWARDS

Teaching Assistant Award

Department of Mathematics, UC San Diego

Spring 2024

San Diego, CA

Integrity Champion

UC San Diego Academic Integrity Office

Spring 2023

San Diego, CA

PUBLICATIONS

1. *3-handle construction on II_1 factors* (with D. Gao and S. Kunnawalkam Elayavalli).
Proc. Amer. Math. Soc., to appear (2025).
2. *Strict Comparison in Reduced Group C^* -Algebras* (with T. Amrutam, D. Gao, and S. Kunnawalkam Elayavalli).
Invent. Math. (2025).
3. *Simplices of Maximally Amenable Extensions in II_1 Factors* (with S. Kunnawalkam Elayavalli).
Groups Geom. Dyn., published online first (2025).
4. *Internal Sequential Commutation and Single Generation* (with D. Gao, S. Kunnawalkam Elayavalli, and H. Tan).
Int. Math. Res. Not., 2025:8 (2025) rnaf103.
5. *On Conjugacy and Perturbation of Subalgebras* (with D. Gao, S. Kunnawalkam Elayavalli, and H. Tan).
J. Noncommut. Geom., published online first (2025).
6. *Soficity for Group Actions on Sets and Applications* (with D. Gao and S. Kunnawalkam Elayavalli).
Res. Math. Sci., 12:3 (2025). Paper No. 48.
7. *Primeness of Generalized Wreath Product II_1 Factors*.
Math. Z., 309:43 (2025).
8. *Sequential Commutation in Tracial von Neumann Algebras* (with S. Kunnawalkam Elayavalli).
J. Funct. Anal., 288:4 (2025) 110719.
9. *The Maximum Number of Appearances of a Word in a Grid* (with S. Spiro).
Amer. Math. Monthly, 129:5 (2022) 415–434.

10. *Computing a Multi-location Aircraft Fleet Mix* (with S. Wesolkowski and A. Dwarkan). In **ICORES**, (2018) 124–131.

PREPRINTS

1. *Selfless reduced amalgamated free products and HNN extensions* (with D. Gao, S. Kunnawalkam Elayavalli, and L. Teryoshin)
<https://arxiv.org/abs/2604.06982>
2. *A new source of purely finite matricial fields* (with D. Gao, S. Kunnawalkam Elayavalli, and A. Manzoor).
<https://arxiv.org/abs/2603.24502>
3. *Exotic full factors via weakly coarse bimodules* (with D. Gao, D. Jekel, and S. Kunnawalkam Elayavalli).
<https://arxiv.org/abs/2602.00930>
4. *Selfless Inclusions of C^* -Algebras* (with B. Hayes, S. Kunnawalkam Elayavalli, and L. Robert).
<https://arxiv.org/abs/2510.13398>
5. *Some remarks on decay in countable groups and amalgamated free products* (with S. Kunnawalkam Elayavalli and L. Teryoshin).
<https://arxiv.org/abs/2509.08754>
6. *Sofic Actions on Graphs* (with D. Gao and S. Kunnawalkam Elayavalli).
<https://arxiv.org/abs/2408.15470>

COLLOQUIA AND SPECIAL LECTURES

1. Mathematics Colloquium at the University of Southampton, Fall 2025.
2. Mathematics Colloquium at California State University Long Beach, Winter 2025.

RESEARCH SEMINARS

1. Geometric Group Theory Seminar at the University of Oxford, Spring 2026.
2. Junior Functional Analysis Seminar at the University of Oxford, Spring 2026.
3. Operator Algebras Research Seminar at the University of Gothenburg, Spring 2026.
4. Operator Algebras Seminar at the University of Southern Denmark, Spring 2026.
5. Seminar on group theory of the École normale supérieure (Paris), Spring 2026.
6. Operator Algebras Seminar at KU Leuven, Spring 2026.
7. Analysis Seminar at Newcastle University, Winter 2026.
8. Spectra & Moduli Seminar at Durham University, Winter 2026.
9. Groups and Operator Algebras Seminar at the University of Copenhagen, Winter 2026.
10. Analysis Seminar at the University of Glasgow, Fall 2025.
11. Mathematical Physics and Operator Algebras Seminar, Michigan State University, Winter 2025.
12. Groundwork for Operator Algebras Lecture Series Seminar, virtual, Fall 2024.
13. Functional Analysis Seminar, University of California San Diego, Fall 2024.
14. Operator Theory Seminar, University of Iowa, Fall 2024.
15. Functional Analysis Seminar, University of California Los Angeles, Fall 2024.
16. Food for Thought Seminar, University of California San Diego, Fall 2024.
17. Operator Theory Seminar, University of Virginia, Winter 2024.

18. C^* -algebra Seminar, Arizona State University, Fall 2023.
19. Groundwork for Operator Algebras Lectures Series Seminar, virtual, Winter 2022.
20. Food for Thought Seminar, University of California San Diego, Winter 2022.
21. Food for Thought Seminar, University of California San Diego, Fall 2020.
22. Food for Thought Seminar, University of California San Diego, Winter 2020.
23. Model Theory of C^* -Algebras Seminar, University of Waterloo, Spring 2019.

CONFERENCE AND WORKSHOP TALKS

1. Workshop on Matricial Approximations, Institut Henri Poincaré, Fall 2026, to appear.
2. Groups, Dynamics, and Operator Algebras Conference, University of Glasgow, Summer 2026, to appear.
3. UK operator algebras conference 2026, International Centre for Mathematical Sciences, Summer 2026.
4. Recent Developments in Operator Algebras, Brin Mathematics Research Center, Winter 2026.
5. Operator Algebras in the South of the UK, University of Bristol, Fall 2025.
6. Spectral Gaps Workshop, Isaac Newton Institute, Fall 2025.
7. Mini-course on Topological Phenomena in the Cuntz semigroup, University of Oxford, Fall 2025.
8. C^* -algebras Workshop, Oberwolfach Research Institute for Mathematics, Summer 2025.
9. Workshop on Group Operator Algebras: Classification Structure and Rigidity, Banff International Research Station, Fall 2024.
10. Workshop on Operator Algebras and Applications: Groups and Group Actions, Fields Institute, Fall 2023.
11. East Coast Operator Algebras Symposium, University of Purdue, Fall 2023.
12. Groundwork in Operator Algebras Lecture Series, University of Purdue, Summer 2023.
13. Workshop Series in von Neumann Algebras and Geometric Group Theory, University of Iowa, Spring 2023.
14. Student Workshop in Algebra, Number Theory, and Algebraic Geometry, University of California San Diego, Fall 2021.
15. Student Workshop in Algebra, Number Theory, and Algebraic Geometry, University of California San Diego, Spring 2021.
16. Canadian Undergraduate Mathematics Conference, University of Saskatchewan, Summer 2018.

TEACHING

1. **Stipendiary Lecturer.** University of Oxford, Spring 2026.
Maths ASO, Group Theory.
2. **Stipendiary Lecturer.** University of Oxford, Winter 2026.
Maths A3, Rings and Modules.
3. **Stipendiary Lecturer.** University of Oxford, Winter 2026.
Maths A4, Integration.
4. **Stipendiary Lecturer.** University of Oxford, Fall 2025.
Maths A0, Linear Algebra.
5. **Stipendiary Lecturer.** University of Oxford, Fall 2025.
Maths A2.1, Metric Spaces.
6. **Instructor of Record.** University of California San Diego, Summer 2023.
Math 2, Intro to College Mathematics.

7. **Instructor of Record.** University of California San Diego, Summer 2022.
Math 10A, Calculus I.
8. **Senior Teaching Assistant.** University of California San Diego, Fall 2021–Spring 2023.
Math 500, Teaching Assistant Training.
9. **Lead Teaching Assistant.** University of California San Diego, Winter 2022.
Math 20B, Calculus for Science and Engineering II.
10. **Teaching Assistant.** University of California San Diego, Spring 2025.
Math 142B, Introduction to Analysis II.
11. **Teaching Assistant.** University of California San Diego, Winter 2025.
Math 142A, Introduction to Analysis I.
12. **Teaching Assistant.** University of California San Diego, Fall 2024.
Math 142A, Introduction to Analysis I.
13. **Teaching Assistant.** University of California San Diego, Fall 2024.
Math 140A, Foundations of Real Analysis I.
14. **Teaching Assistant.** University of California San Diego, Spring 2024.
Math 142B, Introduction to Analysis II.
15. **Teaching Assistant.** University of California San Diego, Winter 2024.
Math 102, Applied Linear Algebra.
16. **Teaching Assistant.** University of California San Diego, Fall 2023.
Math 18, Linear Algebra.
17. **Teaching Assistant.** University of California San Diego, Spring 2021.
Math 142B, Introduction to Analysis II.
18. **Teaching Assistant.** University of California San Diego, Winter 2021.
Math 142A, Introduction to Analysis I.
19. **Teaching Assistant.** University of California San Diego, Winter 2021.
Math 140B, Foundations of Real Analysis II.
20. **Teaching Assistant.** University of California San Diego, Fall 2020.
Math 20B, Calculus for Science and Engineering II.
21. **Teaching Assistant.** University of California San Diego, Summer 2020.
Math 109, Mathematical Reasoning.
22. **Teaching Assistant.** University of California San Diego, Spring 2020.
Math 103B, Modern Algebra II.
23. **Teaching Assistant.** University of California San Diego, Winter 2020.
Math 103A, Modern Algebra I.
24. **Teaching Assistant.** University of California San Diego, Fall 2019.
Math 20B, Calculus for Science and Engineering II.
25. **Teaching Assistant.** University of Waterloo, Summer 2017.
Math 245, Linear Algebra 2 (Advanced Level).
26. **Tutor.** University of Waterloo Mathematics Tutoring Centre, Fall 2016–Winter 2019.

Peer reviewed multiple papers in the following journals:

1. Canadian Mathematical Bulletin;
2. Electronic Journal of Combinatorics;
3. Journal of Operator Theory;
4. Journal of the London Mathematical Society;
5. Proceedings of the American Mathematical Society.

SERVICE

1. Transfer of Status Committee for Joseph Gondek, Summer 2025
2. Oxford Master's Admissions, Winter 2026
3. Oxford Undergraduate Admissions, Fall 2025
4. Transfer of Status Committee for Austin Shiner, Fall 2025
5. YMC*A Organizing Committee, Fall 2025–Summer 2026
6. Academic Integrity Review Board Panelist, Fall 2020–Spring 2025
7. Academic Integrity Review Board Advisor, Fall 2024–Spring 2025

MENTORING

Worked with the following students in a mentorship role:

1. Austin Shiner 2025–2026 (DPhil at Oxford)
2. David Gao 2023–2025 (PhD at UC San Diego)
3. Lizzy Teryoshin 2024–2025 (undergraduate at UC San Diego)
4. Nicholas Zhao 2020–2021 (PhD at UC San Diego)