Xander Povey

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EDUCATION

PhD *Low-Dimensional Topology (ongoing)*　　　　　　2024-2028
Imperial College London
Supervisor: Steven Sivek

MSc *Pure Mathematics*　　　　　　2023-2024
Imperial College London
Thesis supervisor: Simon Donaldson

BA, MA *Mathematics*　　　　　　2020-2023
Trinity College, University of Cambridge

RESEARCH INTERESTS

My interests lie in low-dimensional topology and gauge theory. Specifically, I am thinking about problems of knot concordance using equivariant Seiberg-Witten theory.

PROJECTS

Serre spectral sequences and homotopy theory　　　　　　2025
Supervisor: Steven Sivek

Family Seiberg-Witten equations　　　　　　2025
Supervisor: Aleksander Doan

The Seiberg-Witten equations and four-manifolds　　　　　　2024
Supervisor: Simon Donaldson

Cameras on trains　　　　　　2024
Solve for X, Martingale Foundation

Curvature estimates and Bernsein's problem　　　　　　2023
Supervisor: Neshan Wickramasekera

FUNDING AND AWARDS

- Martingale Scholarship (2023-2028) for postgraduate study in mathematics.
- Best MSc Pure Mathematics student in cohort award 2024.
- Best MSc Pure Mathematics poster presentation award 2024.
- Winner of "Solve for X 2024". Awarded for best presentation of research to a panel of judges from both industry and academia.
- Keasbey Bursary (2022) for assistance in achieving my academic goals by recommendation of my tutor.
- Trinity College exam prize (2021) for exceptional performance in exams.
- Trinity College Junior Scholarship (2021-2022) for exceptional performance in exams.
- Cambridge Bursary (2020-2022) and Trinity College Maintenance Grant (2022-2023).

TEACHING

- At Imperial:
  - London Maths Outreach:
    * Four week course on ordinals and cardinals for sixth-form students.
  - Senior Graduate Teaching Assistant:
    * Groups and Rings Term 1 2025/26,
  - Graduate Teaching Assistant:
    * Linear Algebra and Numerical Analysis Term 2 2025/26
    * Analysis II Term 2 2024/25,
    * Linear Algebra and Numerical Analysis Term 1 2024/25,
    * Linear Algebra and Numerical Analysis Term 2 2023/24,
    * Analysis II Term 1 2023/24.
- At Cambridge:
  - Part IB Topology Lent 2025/26,
  - Part II Algebraic Topology Michaelmas 2025/26,
  - Part II Differential Geometry Lent 2024/25,
  - Part II Algebraic Topology Michaelmas 2024/25.
- STEP II & III marking 2025.

TALKS AND PRESENTATIONS

- London low-dimensional topology seminar Spring 2026: "The inscribed square problem".

- Imperial Junior Geometry Seminar Autumn 2025, title: "The manifold faces of the manifolds of the fourth dimension",

- Two talks at Aleksander Doan's geometry reading seminar on the Seiberg-Witten family equations,

- Keynote speaker at Imperial MSc poster presentation 2025,

- London low-dimensional topology seminar Autumn 2024: "Introduction to Seiberg-Witten Theory".