

# Alexander Milner

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## Degrees

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### PhD at Edinburgh University

*School of Mathematics*

September 2024 - July 2028

- Working with supervisor Dr Dimitra Kosta on a fully-funded scholarship from the School of Mathematics.
- Taking graduate level courses run by the Scottish Mathematical Sciences Training Centre (SMSTC) including:
  - Algebraic Geometry, Differential Topology, Algebraic Topology, Representation Theory, Regression and Simulation Methods, Modern Regression and Bayesian Methods.

### Integrated Masters at Durham University

*Department of Mathematical Sciences*

September 2020 - July 2024

- Exam average of 92% with 92% in dissertation.
- **Prizes awarded:** Best marks on degree program, Best dissertation mark, Best marks out of Fourth Year Students, Best marks out of Third Year Students, Best marks out of Second Year Students, Outstanding performance in First Year Natural Sciences Degree Program.

## Research Experience

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### Research project funded by London Mathematical Society Undergraduate Research Bursary

- Under supervision of Dr Jack Shotton, studied the density of primes such that the  $\mathbb{F}_p$ -rational group of points on an elliptic curve without complex multiplication has full  $j$ -torsion.
- Currently writing up paper to be submitted to the *Involve* journal in due course.

### Masters Dissertation

- Under supervision of Dr Dan Evans, investigated applications of the Polynomial Method to Combinatorics.
- Extended results by Kezdy and Snevily and used the findings to prove a new result classifying when elements in a matrix can be rearranged to make said matrix invertible using commutative algebra.

## Events attended

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- Computational Algebraic Geometry Workshop in Durham (18-22 November 2024)
- Glasgow Edinburgh Algebra Research Student (GEARS) seminar meeting in Glasgow (17 October 2024)
- Scottish Mathematical Sciences Training Centre (SMSTC) 2024 Symposium in Perth (2-3 October 2024)
- UK Applied Algebra and Geometry Network Meeting in Edinburgh (11-12 July 2024)
- ECRM: Early Career Research in Mathematics (11-14 July 2023)
- Durham Symposium 2023: Spectral Gaps (7-11 August 2023)

## Teaching Experience

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### University Tutorials

- Ran workshops for Fundamentals of Pure Maths and Introduction to Number Theory courses as well as marking assignments at Edinburgh University.
- Taught weekly Calculus tutorials and marked first year assignments at Durham University.

## Mathematics competitions

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- Competed in 2023 Simon Marais Competition, coming 7th in the Pairs Division winning A\$1600.
- Competed in 2022 Simon Marais Competition, coming 9th in the Pairs Division winning A\$800.

## Other skills and interests

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- High level of proficiency with Python and Javascript and experience using Sage, Mathematica and Macaulay2.
- Keen conductor, violinist, pianist and organist, currently conducting Edinburgh University Sinfonia, having conducted the Durham University Symphony Orchestra from 2021-2024.