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## EDUCATION

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### St Andrews University

2019 – present

#### PhD Mathematics (in progress)

*Topic: Fractal Geometry (more specifically, I am interested in interpolating between different notions of dimension).*

*Supervisor: [Dr Jonathan Fraser](#)*

*Second supervisor: [Professor Kenneth Falconer](#)*

*With the [Analysis Research Group](#)*

*Fully funded by a grant from the [Leverhulme Trust](#)*

#### **Research papers:**

*Generalised intermediate dimensions, [arXiv](#) (submitted)*

### St Andrews University

2018 – 2019

#### MSc Mathematics (Distinction)

19.5 out of 20 Grade Point Average

*Dissertation:*

[Solvability of Partial Differential Equations on Fractal Domains](#)

*(19.1 out of 20, supervised by [Professor Kenneth Falconer](#))*

*Selection of taught modules: Measure and Probability Theory, Topics in Groups, Graph Theory, Hyperbolic Geometry, Galois Theory, Advanced Combinatorics*

### King's College University of Cambridge

2015 – 2018

#### BA (Hons) Mathematics (2:1)

*Selection of courses:*

*Part II: Linear Analysis, Analysis of Functions, Topics in Analysis, Differential Geometry, Riemann Surfaces, Logic and Set Theory, Algebraic Topology*

*Part IB: Statistics, Markov Chains, Linear Algebra, Analysis II, Complex Analysis, Metric and Topological Spaces, Groups Rings and Modules, Fluid Dynamics, Electromagnetism*

*Part IA: Probability, Differential Equations, Analysis I, Vectors and Matrices, Groups, Numbers and Sets, Vector Calculus, Dynamics and Relativity*

*Computer-Aided Teaching of All Mathematics (CATAM) projects in topics such as algebra, differential equations, statistics and number theory. Marks are each out of 40:*

*Part II projects: marks 38, 36, 37, 36*

*Part IB projects: marks 38, 36, 37, 36*

### Thomas Tallis Sixth Form

2013 – 2015

#### A-Levels

*Mathematics(A\*), Further Mathematics(A\*), Physics(A\*), Chemistry(A\*), History(A), Extended Project Qualification (EPQ): On the Creation of the NHS (A\*)*

2015

**STEP** (Sixth Term Examination Paper): Papers I, II and III, all at Grade 1

2014

[UKMT](#) Senior Maths Challenge: 105 out of 125, qualified for BMO (British Mathematical Olympiad) Round 1

### Sedgehill School

2008-2013

#### GCSEs

11, all at grade A\* including English, Maths, Triple Science

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## TALKS

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- Intermediate dimensions and infinite conformal iterated function systems  
*University of Warwick's Dynamics and Group Geometry Early Researchers (DAGGER) Seminar, 1/3/21*
- Interpolating between the Hausdorff and box dimensions  
*Postgraduate Interdisciplinary Mathematics Symposium (PIMS) St Andrews (online instead of at the Burn House due to COVID-19), 26/1/21*
- New Intermediate Dimensions  
[\*University of St Andrews Analysis Seminar\*](#) (online), 30/6/20
- Ergodic Theory and Conditional Probability  
*Analysis Reading Group, University of St Andrews, 19/2/20*
- Weak Tangents in Dimension Theory  
*Postgraduate Interdisciplinary Mathematics Symposium (PIMS) St Andrews, The Burn House (Edzell), Scotland, 27/1/20-29/1/20*
- Analysis on some post-critically finite self-similar sets  
*Pure Postgraduate Seminar, University of St Andrews, 5/11/19*
- Leray-Schauder Topological Degree Theory and Applications to Partial Differential Equations  
*summer project, University of Cambridge, 24/7/18*

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## CONFERENCES/MEETINGS ATTENDED

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- [\*Afternoon workshop on fractal geometry and geometric measure theory\*](#)  
*University of St Andrews, 2/9/19*

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## EMPLOYMENT

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- **Teaching undergraduate tutorials at the University of St Andrews:**  
2020-2021 Autumn: MT2502 Analysis (2 groups)  
2019-2020 Spring: MT1003 Pure and Applied Mathematics (2 groups) and remote marking during the UK lockdown due to the COVID-19 pandemic  
2019-2020 Autumn: MT2502 Analysis (4 groups)
- April 2020: Private **online tutoring** during the UK lockdown due to the COVID-19 pandemic
- November-December 2018: **Tutoring** undergraduate mathematics (analysis and statistics) with Oxford Exclusif Tutorial Agency.

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## WORK EXPERIENCE

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- Summer 2018: LMS-funded **Cambridge Summer Research in Mathematics (SRIM) project** on Leray-Schauder Topological Degree Theory and its applications to Partial Differential Equations (an area of mathematical analysis)
- 12 July – 4 August 2017: internship at market research company Kantar TNS, working as a **data scientist** for the social media team. Worked in Python to automate the analysis of the sentiment of opinions expressed on social media, for example by creating a Spanish-language part-of-speech

tagger using machine learning techniques. Conducted some statistical analysis of social media data.

- 2015 onwards: Periodically **mentoring** students at Thomas Tallis Sixth Form for Mathematics and Further Mathematics A level, Oxford MAT, STEP, and Cambridge Computer Science entrance exam
- 2011 (1 week): shadowing a doctor at Hilly Fields Medical Centre

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## AWARDS AND PRIZES

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- 2019: **Postgraduate Gray Prize** (Science and Medicine) 2018/2019 for the best taught postgraduate student for the 2018/2019 session based on the St Andrews Grade Point Average
- 2013: Achieved the Bronze [Duke of Edinburgh's Award](#)

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## MEMBERSHIP OF PROFESSIONAL BODIES

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- 2019 – present: Associate Member of the [Institute of Mathematics and its Applications](#) (AMIMA)
- 2020 – present: [Edinburgh Mathematical Society](#) (ordinary member)

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## IT SKILLS

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- Good knowledge of **LaTeX** (wrote up eight CATAM projects using LaTeX, and use it to write up research for my PhD)
- Fluent in **MATLAB**: completed eight CATAM projects using MATLAB
- Knowledge of **Python**
- Operating systems: proficient in **Linux** and Windows
- Confident with GIMP, LibreOffice, and Microsoft Office programs, such as Excel

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## LANGUAGE SKILLS

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- **English**: native
- **German**: conversational, A\* at GCSE
- **Hindi**: conversational

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## EXTRA-CURRICULAR ACTIVITIES

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- Played for St Andrews **Chess** Club
- Regularly played for the King's College **badminton** team, including in the inter-college league
- Took part in **World Challenge** expedition to Morocco. Did volunteering work, helping to refurbish a local school.

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## MUSIC

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- **Piano:** Grade 8. Have performed solo in numerous concerts.
- **Clarinet:** Grade 5. Was a member of the school band; performed on tour in Canada and Venice.

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## RESPONSIBILITIES

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- Co-organiser of the **Postgraduate Interdisciplinary Mathematics Symposium (PIMS)** St Andrews, 2021, held online instead of at the Burn House due to COVID-19. Helped to arrange and schedule talks by 15 different speakers.
- **Treasurer** of the University of St Andrews Mindfulness Society since 2019
- Was a school **prefect**

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## INTEREST AND SKILLS

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- **Mathematics:** regularly attend [St Andrews Analysis Seminars](#) and other talks
- **Travel:** have travelled widely in South Asia, Western Europe and North America