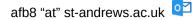
# Amlan Banaji

Curriculum Vitae

PhD student in Mathematics at St Andrews













Nationality: UK

# **EDUCATION**

#### **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: <u>Professor Jonathan Fraser</u>

Second supervisor: Professor Kenneth Falconer

With the Analysis Research Group

Fully funded by a grant from the Leverhulme Trust

#### Research papers:

- Intermediate dimensions of infinitely generated attractors (with J. M. Fraser), <u>arXiv</u> (submitted)
- Generalised intermediate dimensions, arXiv (submitted)

For a list of academic talks given and conferences/meetings attended please see my <u>personal website</u>.

#### **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 <u>Professor Kenneth Falconer</u>) 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

**GCSEs** 

2014 <u>UKMT</u> Senior Maths Challenge: 105 out of 125, qualified for BMO

(British Mathematical Olympiad) Round 1

**Sedgehill School** 

2008-2013 11, all at grade A\* including English, Maths, Triple Science

## **EMPLOYMENT**

Teaching undergraduate tutorials at the University of St Andrews:

2020-2021 Spring: MT2505 Abstract Algebra (2 groups)

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 COVID-19.

2019-2020 Autumn: MT2502 Analysis (4 groups)

- December 2020 to March 2021: Tutoring A level and STEP mathematics with Sishu Chinese School
- December 2020: Tutoring undergraduate mathematics (measure and integration) with PhD Tutors
- April 2020: Private online tutoring (mathematics) during the UK lockdown due to the COVID-19 pandemic
- November-December 2018: Online tutoring of undergraduate mathematics (analysis and statistics) with Oxford Exclusif Tutorial Agency and PhD Tutors

# **WORK EXPERIENCE**

- 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

## **AWARDS AND PRIZES**

- 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

# **MEMBERSHIP OF PROFESSIONAL BODIES**

- 2019 present: Associate Member of the <u>Institute of Mathematics and its Applications</u> (AMIMA)
- 2020 present: Edinburgh Mathematical Society (ordinary member)

## **IT SKILLS**

- 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

### LANGUAGE SKILLS

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

# **EXTRA-CURRICULAR ACTIVITIES**

- 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.

# **MUSIC**

- **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.

## **RESPONSIBILITIES**

- 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

# **INTEREST AND SKILLS**

- Mathematics: regularly attend <u>St Andrews Analysis Seminars</u> and other talks
- Travel: have travelled widely in South Asia, Western Europe and North America