CURRICULUM VITAE
Douglas C. Howroyd

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Date of Birth: 21/04/1994

EDUCATION

- September 2016 – June 2020: PhD in Pure Mathematics (expected), The University of St Andrews.
  - Topic: Topics in Fractal Geometry
  - Supervisors: Professor Kenneth Falconer and Dr. Jonathan Fraser
  - Fully funded by EPSRC
- September 2012 – June 2016: M.Math (Honours), First Class, The University of Manchester.
  - 3rd Year Dissertation: *On the Hausdorff measure of the Sierpinski gasket* with Nikita Sidorov. Grade achieved 92%.
  - 4th Year Dissertation: *Assouad type dimensions for self-affine sponges* with Jonathan Fraser. Grade achieved 97%.
  - Average: 90%
- September 2010 – July 2012: French Baccalaureate with Scientific speciality including Maths (19/20) and an overall average of 15/20, Lycee Carnot Roanne, France.

RESEARCH EXPERIENCE

My current research is in Fractal Geometry, an area in which I would like to further my understanding, and its links to Geometric Measure Theory and Ergodic Theory. Particular interests at the moment are self-affine sets, Assouad dimension and dimension theoretic properties of measures.

PUBLICATIONS

Submitted:

(6) On the Hausdorff dimension of microsets (with J. M. Fraser, Antti Käenmäki and H. Yu), 15pp, arxiv:1808.00707.

(5) Dimension growth for iterated sumsets (with J. M. Fraser and H. Yu), 24pp, arXiv:1802.03324.

Accepted:

(4) Assouad type dimensions for certain sponges with a weak coordinate ordering condition, 18pp, arXiv:1610.04031.
Journal of Fractal Geometry

(3) Assouad dimension of random processes (with H. Yu), 8pp, arXiv:1707.02507.
Proceedings of the Edinburgh Mathematical Society

(2) On the upper regularity dimensions of measures (with J. M. Fraser), 21 pp, arXiv:1706.09340.
Indiana University Mathematics Journal

Published:

(1) Assouad type dimensions for self-affine sponges (with J. M. Fraser)
Ann. Acad. Sci. Fenn. Math, **42**, (2017), 149 – 174.

TEACHING

I enjoy teaching and score consistently well in the student feedback. I plan on teaching at least two tutorials per semester, when possible, during my time as a PhD student.

Tutorials and supervisions:

- 2017 – (St Andrews):

  CAPOD one on one tutoring in mathematics for all degrees covering a range of topics.

- 2017 – 2018 (St Andrews):
  - Tutor for MT1003 Pure and Applied Mathematics, 2 groups.
  - Tutor for MT2505 Analysis, 3 groups.
- 2016 – 2017 (St Andrews):
  - Tutor for MT1003 Pure and Applied Mathematics, 2 groups.
  - Tutor for MT2505 Analysis, 2 groups.
- 2015 – 2016 (Manchester):
  - Tutor for MATH10212 Linear Algebra B, 1 group.
  - Teaching Assistant in 1 supervision per week for the Complex Analysis half of the MATH20101 Real and Complex Analysis module.
- 2013 – 15 (Manchester): PASS leader. This involved running support classes every week for a group of 10 first year mathematics students. I organised the weekly meetings, advertised them to the group and then led the sessions, ensuring everyone was involved whilst discussing their latest course material.

CONFERENCES AND SEMINARS

- Dimensions and Measures: 21/01/17, *Postgraduate Interdisciplinary Mathematics Symposium*, The Burn House, UK.
- Attended and gave multiple talks at the Analysis seminar at The University of St. Andrews (2016 –) as well as the additive combinatorics reading group and the pure postrgraduate seminar.
- Attended the weekly Dynamical Systems and Analysis seminar at The University of Manchester (2015–2016).

RELEVANT AWARDS

- 2015: MMath Year 4 Scholarship (tuition fees waiver) for academic excellence.

POSTS OF RESPONSIBILITY

- 2015 – 2016: 4th year student representative and one of the student representatives on the school board meetings.
- 2013 – 2016: Open day helper. This involves talking to prospective students and parents about the interview process and the course details. I also lead tours of the university whilst answering any questions.
- 2014 – 2015: Topical Secretary of the University of Manchester mathematics society. I worked to increase the society's members by 4,546%, and ran biweekly talks given by lecturers and students on mathematics. This involved inviting people to give talks, advertising the event and ensuring the day ran successfully.
- 2012 – 2013: Communications secretary for the Whitworth Park Residents Association. I advertised all the events ran by the association using various forms of media, and assisted with the general management and organisation of the association and its events.

OTHER SKILLS

- IT skills working with programs such as Microsoft Office packages, LaTeX, Mathematica, Matlab, Python and C++.
- Fluent in French and English.

REFERENCES

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