LAWRENCE DAVID LEE

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PUBLICATIONS

Lq-spectra of self-affine measures: closed forms, counterexamples, and split binomial sums (with Jonathan M. Fraser and Han Yu). Submitted.

Lq-spectra of measures on planar non-conformal attractors (with Kenneth J. Falconer and Jonathan M. Fraser). **Ergodic Theory and Dynamical Systems** (to appear).

Diophantine approximation on manifolds and lower bounds for Hausdorff dimension (with Victor Beresnevich, Robert C. Vaughan and Sanju Velani). **Mathematika**, 63 (2017), 762-779.

TALKS

- Lq-spectra of measures on non-conformal attractors, Analysis Seminar, University of St Andrews, 18/2/20

- Multifractals, at Postgraduate Interdisciplinary Mathematical Symposium (PIMS), The Burn (Edzell), UK, 30/1/1-1/2/19

- Self-affine multifractals in the plane, at Research Day, University of St Andrews, 24/1/19

- Lq-spectra of self-affine measures: closed forms, counterexamples, and split binomial sums, Analysis Seminar, University of St Andrews, 6/11/18

- Diophantine approximation: an introduction, at "Edinburgh Mathematical Society Postgraduate Meeting for Students", The Burn (Edzell), UK, 21/5/18-23/5/18. (Awarded joint prize for best talk).

- Closed form expressions for Lq-spectra, Analysis Seminar, University of St Andrews, 1/5/18

- Diophantine approximation: an introduction, at "Postgraduate Interdisciplinary Mathematical Symposium (PIMS)", The Burn (Edzell), UK, 31/1/18-2/2/18

- Diophantine approximation on manifolds and lower bounds for Hausdorff dimension, at "Workshop on Fractals and Dimensions", Mittag-Leffler Institute, Sweden, 6/12/17

- Diophantine approximation on manifolds and lower bounds for Hausdorff dimension, Analysis Seminar, University of St Andrews, 8/10/17

CONFERENCES/MEETINGS ATTENDED

- Thermodynamic Formalism: Ergodic Theory and Geometry, University of Warwick, UK, 22/7/19-26/7/19

- Number Theory and Dynamics, University of Cambridge, UK, 25/3/19-29/3/19

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- One Day Ergodic Theory Meeting, University of Manchester, UK, 20/3/19
- Postgraduate Interdisciplinary Mathematical Symposium (PIMS), The Burn (Edzell), UK, 30/1/1-1/2/19
- Fractals and Stochastics VI, Bad Herranalb, Germany, 30/9/18-5/10/18
- CMI at 20, University of Oxford, UK, 24/9/18-26/9/18
- Thermodynamic formalism in dynamical systems, ICMS (Edinburgh), UK, 18/6/18-22/6/18
- One Day Ergodic Theory Meeting, University of St Andrews, UK, 14/6/18
- British Mathematics Colloquium, University of St Andrews, UK, 11/6/18-14/6/18
- Edinburgh Mathematical Society Postgraduate Meeting for Students, The Burn (Edzell), UK, 21/5/18-23/5/18
- Probability, Analysis and Dynamics 2018, University of Bristol, UK, 4/4/18-6/4/18
- Postgraduate Interdisciplinary Mathematical Symposium (PIMS), The Burn (Edzell), UK, 31/1/18-2/2/18
- Workshop on Fractals and Dimensions, Mittag-Leffler Institute, Sweden, 4/12/17-8/12/17
- Workshop on Diophantine approximation and related fields, University of York, UK, 26/6/17-30/6/17

EDUCATION

University of St Andrews, PhD   **2017- Present**

I am currently studying for an EPSRC funded PhD in fractal geometry under the supervision of Professor Kenneth Falconer and Dr Jonathan Fraser. I have primarily focused on studying multifractal phenomena, in particular focusing on the dimension theory of self-affine measures and measures supported on sets generated by nonlinear IFS. Aside from research I have so far undertaken a variety of broadening courses with the Scottish Mathematical Sciences Training Centre (SMSTC). I have also provided support teaching for undergraduate courses.

University of York, MMath   **2013-2017**
Awarded a First Class Degree with Distinction (Average 93%)

I completed an integrated masters in mathematics at the University of York. I specialised primarily in pure mathematics, in particular in number theory and analysis. My final year project, entitled "Fractals, Dynamics, Manifolds and Number

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Theory" was written on Diophantine approximation on manifolds and was and was supervised by Professor Victor Beresnevich. My personal supervisor was Professor Sanju Velani. I was awarded the Annie Curry Williamson Scholarship, which was worth £2000 a year for the first there years of my degree. The award was based on my academic potential as well as parental income. I was also awarded the Kathleen Ryan Project Prize for the best overall MMath final year project performance and the P B Kennedy Prize for outstanding performance in the final degree examination in Mathematics at my graduation. Each of these awards was worth £250.

The Queen Katherine School Kendal   **2006-2013**

A Levels in Maths (A*), History (A), General Studies (A), English Literature (B)
AS Level Further Mathematics (A)

AWARDS

- Shared first prize for the best EMS (Edinburgh Mathematical Society) student presentation at their 2018 postgraduate meeting   Summer 2018
- Kathleen Ryan Project Prize for the best overall MMath final year project performance   Summer 2017
- P B Kennedy Prize for outstanding performance in the final degree examination in Mathematics   Summer 2017
- London Mathematical Society Undergraduate Research Bursary   Summer 2016
- EPSRC Funded Project   Summer 2015
- Annie Curry Williamson Scholarship   2013 – 2016

OTHER RESEARCH EXPERIENCE

Rational Points Near Planar Curves   **Summer 2016**

I worked with Professor Victor Beresnevich on an LMS funded project on Diophantine approximation, in which we studied the set of psi-approximable points on planar curves. We successfully expanded on previous results in this area and found a lower bound for the Hausdorff dimension of this set for a larger class of curves than had previously been considered. This work was then generalised to manifolds in our paper "Diophantine approximation on manifolds and lower bounds for Hausdorff dimension" (together with Robert C. Vaughan and Sanju Velani) which was published in the journal Mathematika in 2017.

Project in Finite Group Theory   **Summer 2015**

I completed an EPSRC funded project with Professor Stephen Donkin, in which we looked at so-called p-regular elements in finite groups. This led us to an alternative proof of a theorem concerned with counting odd order elements in a given symmetric group.

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RELEVANT SKILLS AND COURSES

Python
LaTeX and Maple mathematics software
Microsoft Office (word, excel, powerpoint)

MEMBERSHIP OF PROFESSIONAL SOCIETIES

London Mathematical Society   2013 to the present

REFERENCES

Professor Kenneth Falconer	Dr Jonathan Fraser
Department of Mathematics	Department of Mathematics
University of St Andrews	University of St Andrews
St Andrews	St Andrews
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