

STUART BURRELL

Carnegie Scholar ◊ University of St Andrews ◊ United Kingdom

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Languages English, Basic German, Basic Japanese
Programming Python, R, Git/GitHub, GAP, Unix, LaTeX, Maple.

EDUCATION

PhD, Mathematics, *University of St Andrews* October 2017 - Present
Fractal geometry, dynamical systems and dimension theory.
Scottish Mathematical Sciences Training Center,
Graduate courses in Algebra, Analysis, Topology, Probability and Statistics 2016 - 2018
Academy for PhD Training in Statistics,
Graduate courses in Statistics at the Universities of Cambridge, Durham and Glasgow. 2016 - 2017
Machine Learning Engineer Nanodegree, *Udacity* 2016 - 2017
MMath, Mathematics, First Class Honours (93%/GPA 4.0), *University of St Andrews* 2012 - 2016

PUBLICATIONS

The dimensions of inhomogeneous self-affine sets (with J.M. Fraser), arXiv July 2018
submitted.
On the dimension and measure of inhomogeneous attractors, arXiv May 2018
Real Analysis Exchange (to appear).

SOFTWARE CONTRIBUTIONS

GAP Semigroups package 2016
Methods to decide the order and torsion problems of natural and tropical matrix semigroups.
GAP Digraphs package 2016
Methods for computing the simple circuits of a digraph.

EXPERIENCE

Research in Statistical Ecology and Machine Learning 2016-2017
Centre for Research into Ecological and Environmental Modelling, St Andrews.
GAP Software Development Summer 2016
School of Mathematics and Statistics, University of St Andrews, St Andrews.
Laidlaw Internship in Research and Leadership Summer 2015
School of Mathematics and Statistics, University of St Andrews, St Andrews.
Undergraduate Research Summer School Summer 2014
School of Mathematics and Statistics, University of St Andrews, St Andrews.

AWARDS AND SCHOLARSHIPS

Poster Award, *Fractals and Stochastics 6* October 2018
Carnegie PhD Scholarship 2016-2020
Duncan Prize, *University of St Andrews* 2016
Sanderson Prize, *University of St Andrews* 2016
The Arthur Hinton Read Memorial Prize, *University of St Andrews* 2016
ODSC Machine Learning/Deep Learning Scholarship 2016
IMA Graduate Prize Winner, *Institute of Mathematics* 2016
Graduate Medal in Mathematics, *University of St Andrews* 2016

The Principal's Scholarship for Academic Excellence, <i>University of St Andrews</i>	2012-16
The University Scholarship for Research and Leadership, <i>University of St Andrews</i>	2015
The Deans' List for Academic Excellence, <i>University of St Andrews</i>	2012-16
Gold Duke of Edinburgh Award	2013

TALKS

Dimension drop and inhomogeneous self-affine sets <i>Pure Analysis Seminar, St Andrews.</i>	October 2018
The dimensions of inhomogeneous self-affine sets (poster presentation) <i>Fractals and Stochastics VI, Bad Herrenalb, Germany.</i>	October 2018
A brief note on the dimension of inhomogeneous attractors <i>Dynamic Days Europe, Loughborough.</i>	September 2018
A universal upper bound on the dimension of inhomogeneous attractors <i>British Mathematical Colloquium, St Andrews.</i>	June 2018
How big are inhomogeneous attractors? <i>Edinburgh Mathematical Society PG Student Meeting, The Burn, Glen Esk</i>	May 2018
On the dimension and measure of inhomogeneous attractors <i>Pure Analysis Seminar, St Andrews.</i>	April 2018
An introduction to inhomogeneous attractors <i>Pure Postgraduate Seminar, St Andrews.</i>	April 2018
An introduction to iterated function systems <i>Postgraduate Interdisciplinary Mathematical Symposium, Glen Esk</i>	February 2018
Dimension of inhomogeneous self-conformal and self-affine sets <i>School Research Day, St Andrews.</i>	January 2018
Inhomogeneous attractors and upper box dimension <i>Insitut Mittag-Leffer, Stockholm, Sweden.</i>	December 2017
Trace contrast methods in acoustic space <i>African Institute of Mathematical Sciences, Cape Town, South Africa.</i>	January 2017
An introduction to trace contrast methods <i>University of Cape Town, Cape Town, South Africa.</i>	January 2017
Sequential Monte Carlo in population dynamics <i>School of Mathematics and Statistics, St Andrews.</i>	April 2016
Artificial intelligence and Gödel's incompleteness theorems <i>School of Mathematics and Statistics, St Andrews.</i>	February 2015

OUTREACH

The journey to a PhD in Mathematics <i>UWS Summer STEM Academy, Glasgow.</i>	July 2018
Fractal geometry in nature and art <i>The Royal Society of Edinburgh, Edinburgh.</i>	February 2018

CONFERENCES

Fractal Geometry and Stochastics VI <i>Evangelische Akademie Baden, Bad Herrenalb, Germany</i>	October 2018
CMI at 20 <i>Clay Mathematics Institute, Oxford.</i>	September 2018
Dynamic Days Europe <i>University of Loughborough, Loughborough.</i>	September 2018
Thermodynamic Formalism in Dynamical Systems <i>International Centre for Mathematical Sciences, Edinburgh.</i>	June 2018
British Mathematical Colloquium <i>University of St Andrews, St Andrews.</i>	June 2018

TEACHING

All available student feedback data is included and reported on a scale of 1 (excellent) to 5 (poor) in the categories of Explanation (E), Organisation (O) and Availability (A).

Mathematics and Statistics Tutor , <i>CAPOD, University of St Andrews</i> ,	2016 - Present
MT2502 Analysis , <i>Tutor, University of St Andrews</i>	Autumn 2018
E = 1.09, O = 1.33, A = 1.0	
MT2000 Python , <i>Demonstrator, University of St Andrews</i>	Autumn 2018
Math Base , <i>Tutor, University of St Andrews</i>	Autumn 2018
MT1002 Mathematics , <i>Demonstrator, University of St Andrews</i>	Spring 2018
MT1002 Mathematics , <i>Tutor/Demonstrator, University of St Andrews</i>	Autumn 2017
E = 1.62, O = 1.65, A = 1.17	
MT1003 Pure and Applied Mathematics , <i>Tutor (temporary), University of St Andrews</i>	Spring 2017
MT2508 Statistical Inference , <i>Demonstrator, University of St Andrews</i>	Spring 2017
MT2504 Combinatorics and Probability , <i>Tutor/Demonstrator, University of St Andrews</i>	Autumn 2016
E = 1.17, O = 1.15, A = 1.17	
MT2000 Introduction to Python , <i>Demonstrator, University of St Andrews</i>	Autumn 2016

WORKSHOPS

Postgraduate Interdisciplinary Writing Workshop	August 2018
<i>University of St Andrews, The Burn, Glen Esk.</i>	
Summer School in Dynamics (Introductory and Advanced)	July 2018
<i>International Centre for Theoretical Physics, Trieste, Italy.</i>	
Postgraduate Interdisciplinary Mathematical Symposium	January 2018
<i>University of St Andrews, The Burn, Glen Esk.</i>	
Statistical Methods in Gibbon Conservation	August 2017
<i>Centre for Research into Ecological and Environmental Modelling, St Andrews.</i>	
Estimating Animal Abundance and Density using Acoustic Data	January 2017
<i>University of Cape Town, Cape Town, South Africa.</i>	
Scottish Mathematical Craining Center Symposium	October 2016
Perth.	
CoDiMa software carpentry	October 2016
<i>International Centre for Mathematical Sciences, Edinburgh.</i>	
Advanced PAMGuard	October 2016
<i>PAMTech, Edinburgh.</i>	
Spatial Capture-Recapture Methods	August 2016
<i>Centre for Research into Ecological and Environmental Modelling, St Andrews.</i>	
Laidlaw Leadership Program	2015
<i>endorsed by the Institute of Management, St Andrews.</i>	

PROFESSIONAL RESPONSIBILITIES

Carnegie Trust Scholars Network , <i>Event organiser</i>	2019 - Present
Postgraduate Interdisciplinary Mathematical Symposium , <i>Organiser</i>	2018 - 2019
Scottish Mathematical Sciences Training Centre Council , <i>Student Representative</i>	2016 - 2017