Dr Lee A. Butler

Fry Building, Woodland Road
Bristol, BS8 1UG, UK

Email: lee.butler@bristol.ac.uk
Date of Birth: 20 March, 1985

Education

PhD in Mathematics, University of Bristol, 2007–2011.

Thesis: The density of algebraic points in sets definable in o-minimal structures.
Supervisor: Prof. Jonathan Pila.

MMath first class (Hons.), University of Warwick, 2003–2007.

Final year project: Transcendence and irrationality proofs.
Supervisor: Prof. Samir Siksek.

Teaching Experience

University of Bristol

Teaching associate, 2019-2022, Lecturer 2022-present

- Lecturer, Analysis, 2020–present.
- Tutor for various pure and applied units from Foundation year to second year.
- Run maths cafés for third year Set Theory and Logic units.
- Homework marking for various pure and applied units in all years.
- Exam marking for various pure and applied units in all years.
- Teaching Mathematical Investigations workshops since 2019, including writing workshops, editing workshops for online teaching, and liaising regularly with other workshop teachers.
- Running A-level catch-up sessions, 2019.
- Personal tutor, 2019–present.

Heilbronn research fellow, 2012–2016

- Co-lecturer, Topics in Modern Geometry, 2013–2014.
- Supervised fourth year project on Projective Geometry, 2014.

PhD student, 2007–2011

- First year tutor for Pure mathematics, 2010–2011.
- Teaching support assistant for Taught Course Centre, 2008–2011.

University of Warwick

- Tutor for first year students in Analysis, Linear Algebra, and Foundations of Maths, 2006–2007.

Workshops attended

- Supporting postgraduates who teach mathematics and statistics, *by* The Maths, Stats & OR Network.

Other relevant experience

- Lead maths writer at an academic publishing company, 2017–2018, specialising in content for the new A-level syllabus and 'tiered' test material.
- Worked with Centre for Academic Language and Development to develop the "Maths for mathematicians" unit for the International Foundation Programme.
- Wrote A-level-equivalent entrance exam for International Foundation Programme students in STEM subjects and for international students more generally.
- Prepared short reading course on solving ordinary differential equations for International Foundation Programme students in STEM subjects.
- Co-authored educational research article about Mathematical Investigations workshops with the other workshop teachers.
- Wrote article on mathematical pedagogy for Charter School in Eugene, Oregon.
- Delivered public engagement talks to A-level students.

Conferences and talks

Public engagement

'Irrational numbers', to A-level students in Bristol, 2015.

'Irrationality', to A-level students in Bristol, 2014.

Invited talks

'Proving that Apery's constant is irrational in five minutes', BMC, Bristol 2016.

'A logical approach to irrationality', Logic Seminar, University of Manchester, 2014.

'First order irrationality criteria', Logic Seminar, University of Oxford, 2013.

'O-minimal irrationality criteria', at Applications of O-Minimality to Analysis and Number Theory, University of Passau, 2013.

'Counting problems in model theory', Linfoot Seminar, University of Bristol, 2011.

'Wilkie's conjecture for definable curves', Logic Advanced Class, University of Oxford, 2011.

'On transcendence', at the Second TCC Number Theory Day, University of Oxford, 2008.

Conferences organised

Inaugural MINGLE Conference, Bristol, 2009.

Publications

'Teaching students to write and read mathematics' with Jos Gunns, Rachael Carey, and Andrew Donald, *Proceedings of the British Society for Research into Learning Mathematics* (2020), 40 (2).

'A Diophantine approach to the three and four exponentials conjectures', *The Ramanujan Journal* (2017), 42 (1), pp.199–221, doi:10.1007/s11139-015-9728-2.

'First order irrationality criteria for series', *Journal of Logic & Analysis* (2015), 7 (1), pp.1–15, doi:10.4115/jla.2015.7.1.

'A useful application of Brun's irrationality criterion', *Expositiones Mathematicae* (2015), 33 (1), pp.121–134, doi:10.1016/j.exmath.2014.04.001.

'Some cases of Wilkie's conjecture', *Bulletin of the LMS* (2012), 44 (4), pp.642–660, doi:10.1112/blms/bdr126.

Awards

Gratton Mathematics Prize, Boston Grammar School, 2003.

4th Year Mathematics Project Prize, University of Warwick, 2007.

The Institute of Mathematics & its Applications Prize, University of Warwick, 2007.