Jared White

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Research Interests

Group theory, Functional analysis, abstract harmonic analysis, Banach and operator algebras associated with groups and semigroups, operator theory.

Employment

Sept 2018 -present Postdoctoral Researcher at le Laboratoire de Mathématiques de Besançon, working with Professor Uwe Franz.

Education

2014 – 2018: PhD at the University of Lancaster under the supervision of Professor Garth Dales and Doctor Niels Laustsen. Funded by the EPSRC.

Thesis title: *Banach Algebras on Groups and Semigroups*.

Date of defence: 20th April 2018.

2013-2014: MMath in Mathematics, University of Cambridge (Part III). Graduated in the top half of distinctions.

2010-2013: BA in Mathematics, University of Cambridge. Graduated with an upper second class.

2002-2009: High Storrs Comprehensive Secondary School, Sheffield. I left with four A-levels at grade A in Maths, Further Maths, Russian, and French.

Teaching Experience

- Worked as a graduate teaching assistant for Lancaster University between 2014 and 2018. This involved leading workshops for second, third and fourth year undergraduates, marking their work and providing feedback. Won an award for teaching excellence at Lancaster in 2018.
- On three occasions I have covered revision lectures in the lecturer's absence.
- Was employed to mark the second year complex analysis exam at the University of Lancaster in 2018. Also assisted with the marking of first year exams.
- Acted as academic advisor for Hilbert Space and Complex Analysis exams.
- Volunteered four years running for Florence Nightingale Day: a maths activity day for sixth-form girls hosted annually by Lancaster University.
- Gave 'mini-lectures' about mathematics to sixth-form students at university open days for three years running.

Academic Papers

[1] J.T.White, The Radical of the Bidual of a Beurling Algebra, *Quarterly Journal of Mathematics*, 69 (2018), 975-993.

[2] N.J.Laustsen and J.T.White, An infinite C*-algebra, with a dense, stably-finite *-subalgebra, *Proceedings of the American Mathematical Society*, 146 (2018), 2523-2528.

[3] J.T. White, Finitely-generated left ideals in Banach algebras on groups and semigroups, *Studia Mathematica*, 239 (2017), 67-99.

[4] N.J.Laustsen and J.T.White, Subspaces that can and cannot be the kernel of a bounded operator of a Banach space, to appear in *Proceedings of the 23rd International Conference on Banach algebras and Applications*, (6 pages), arXiv:1811.02399.

[5] J.T. White, Left ideals of Banach algebras and Dual Banach algebras, to appear in *Proceedings of the 23rd International Conference on Banach algebras and Applications* (21 pages), arXiv:1612.05915.

Conferences and Talks

May 2019 I spoke at Les Journées Besançon-Neuchâtel d'Analyse Fonctionnelle at le Laboratoire de Mathématiques de Besançon.

July 2018 I spoke at Abstract Harmonic Analysis 2019 at National Sun Yat-Sen University in Kaohsiung, Taiwan. Received local financial support.

March 2018 I spoke at the Young Functional Analysists' Workshop at the University of Newcastle.

January 2018 I spoke at the weekly Analysis Seminar at the University of Glasgow.

July 2017 I spoke at Banach Algebras and Applications 2017 at the University of Oulu.

April 2017 I spoke at the Young Functional Analysists' Workshop at the University of Glasgow.

November 2016 I was invited to speak at the weekly semigroups seminar at the University of York.

August 2016 I spoke at Groups and Operators, Chalmers University, Gothenburg. Received local financial support.

April 2016 I spoke at the Young Functional Analysists' Workshop at Queen's University Belfast.

August 2015 I spoke at Abstract Harmonic Analysis 2015 at Dalhousie University in Halifax, Nova Scotia.

Other conferences

- Conferences I have attended, and for which I was financially supported by the conference: Young Mathematicians in C*- algebras 2018; Young Mathematicians in C*- algebras 2017; The British Maths Colloquium, University of Durham 2017; Young Mathematicians in C*- algebras 2016; The Stone-Čech Compactification: Theory and Applications, University of Cambridge 2016; The Joint British Maths Colloquium and British Applied Maths Colloquium, University of Cambridge, 2015.
- Also attended: The British Maths Colloquium 2019, University of Lancaster, Les Journées annueles du GDR Analyse Fontionnelle, Harmonique et Probabilités, Laboratoire J.A. Dieudonné, Nice 2018; The British Maths Colloquium, University of Bristol, 2016; Banach Algebras and Applications 2015, held at the Fields Institute in Toronto in August 2015.
- Regularly attended meetings of the North British Functional Analysis Seminar, and the Scottish Operator Algebras Seminar between 2014 and 2018.

Prizes

- GTA (Graduate Teaching Assistant) Teaching Award, Department of Mathematics and Statistics, University of Lancaster, 2018.
- Dean's Award for PhD Excellence, First Year Category 2015: an award presented annually by the Faculty of Science and Technology at the University of Lancaster to a PhD student who has recently completed the first year, accompanied by a £1000 prize.

Skills

Languages

- Native speaker of English.
- Fluent in French.
- Good knowledge of Russian.
- Some rudimentary knowledge of Japanese and German.

IT Skills

- Proficient in Latex.
- Able to program in MATLAB. Also some experience of C++.
- Proficient in use of common packages such as Microsoft Word and Microsoft Excel.

Public Speaking

- Experience speaking at conferences (see above).
- I have given a 3-4 talks per year at my home university since October 2014.

References

Head of teaching at Lancaster:

Dr. Mark MacDonald,
Department of Mathematics and Statistics,
Fylde College, Lancaster University,
Lancaster,
LA1 4YF,
United Kingdom.
Email: m.macdonald@lancaster.ac.uk

Current supervisor:

Professor Uwe Franz,
Laboratoire de Mathématiques de Besançon,
Université de Franch-Compté,
16 Route de Gray,
25030 Besançon,
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France.
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Appendix: Research Statement

My research is concerned with Banach algebras and operator algebras associated with locally compact groups. I am interested in studying how properties of a locally compact group are reflected in the algebras defined on it and vice versa. Such Banach algebras include the group algebra, the measure algebra, the Fourier and Fourier-Stieltjes algebras, as well as weighted L^1 convolution algebras, which are known as Beurling algebras. I am also interested in C*-algebras on groups and semigroups.

One important focus of my research has been the structure and properties of ideals of such Banach algebras. In [3] I studied the question of when maximal left ideals in these Banach algebras are (algebraically) finitely-generated. Of particular interest was a certain co-dimension 1 ideal, called the augmentation ideal, which can be defined for many Banach algebras on groups and semigroups. I was able to give characterizations of the finite-generation of the augmentation ideal in terms of properties of the underlying group or semigroup for many of these algebras, and in so doing I was able to verify a conjecture of Dales and Żelazko concerning arbitrary unital Banach algebras, for the particular families under consideration. I have developed these ideas further by investigating topological finite-generation of closed left ideals in Banach algebras in [5]. In this article I studied a notion of topological left-Noetherianity for Banach algebras, as well a notion of weak*-topological left-Noetherianity for dual Banach algebras. The motivation for [4] was to find an example of a dual Banach algebra which fails to have the latter property. Our example is the algebra of bounded operators of a certain reflexive Banach space.

In [1] I studied the Jacobson radical of a Banach algebra, which is the two-sided ideal consisting of all elements which are annihilate every (algebraically) simple left module, and as such cannot be easily understood via representation theory. This is an important ideal for understanding the structure of a Banach algebra. I was able to resolve two open questions concerning the Jacobson radical of the second dual of a Beurling algebra, posed by Dales and Lau in 2005.

In [2] we used a completion of a certain semigroup algebra to construct a C*-algebra with a certain property. We say that a unital algebra is finite if every left invertible element is also right invertible. This notion has been important in the theory of C*-algebras, as well as in algebra where the finiteness of group rings is an active area of research. Yemon Choi raised the question of whether the completion of a finite normed algebra is finite. Niels Laustsen and I answered this question in the negative, by providing an example of a C*-algebra which is not finite, but contains a dense, unital, finite *-subalgebra.

In current work I am continuing with the above themes, whilst also developing new interests and

expertise. In one project I am studying the weak*-closed ideal structure of measure algebras, whilst in a second project I am studying Banach algebras associated with branch groups and their second duals.