

# BENJAMIN THOMAS FAIRBAIRN

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## EDUCATION, QUALIFICATIONS AND EMPLOYMENT

- 2010-11: Fixed Term Lecturer - Birkbeck, University of London
- 2010: Visiting Professor - Universidad de los Andes
- 2009-10: Honorary Research Fellow and Teaching Assistant - University of Birmingham
- 2005-09: University of Birmingham - PhD Mathematics, Supervisor: Professor Robert Curtis
- 2005: Summer Project on Measuring Coalgebras with Dr Marjorie Batchelor (see preprint)
- 2004-05: University of Cambridge - MMath (“Part III”)
- 2001-04: University of Cambridge - BA Mathematics

## TEACHING EXPERIENCE

- Birkbeck, University of London (owing to the nature of Birkbeck, these classes consists entirely of mature students)
  - *Proof and Structure in Mathematics*: first year undergraduate course, Dec 2010-Jun 2011.
  - *Problems in Mathematics*: fourth year course, Dec 2010-Jun 2011
  - *Second examiner for ‘Algebra 1’, ‘Computational Mathematics’, ‘Number Theory and Geometry’ and ‘Reading Course on number theory’* Dec-Jun 2011
- Universidad de Los Andes
  - *Abstract Algebra II*: a third year undergraduate course, Oct-Dec 2010
  - *Supervised masters project on the Mathieu groups*, Sept-Dec 2010
  - *Linear Algebra II*: second year undergraduate course, Aug-Dec 2010
  - *Linear Algebra I*: service course for undergraduates from a variety of disciplines, Aug-Dec 2010
  - *Representations of symmetric groups*: a reading course for postgraduate students, Aug-Dec 2010
  - *Supervised undergraduate project on Ramsey theory*, Aug-Dec 2010
  - *Linear Algebra I*: service course for undergraduates from a variety of disciplines, Mar-June 2010
- University of Birmingham
  - *Abstraction and Generalization classes* small group teaching for around 12 first year students 2008-9
  - *Teaching assistant 2005-09*

- Miscellaneous

- Mentoring for the UK Mathematics Trust 2006-Present (discussing mathematics problems with 17/18 year olds by email).

#### PUBLICATIONS/PREPRINTS

- To appear

- “New upper bounds on the spreads of the sporadic simple groups”, *Comm. Algebra* [arXiv:0907.2028v3](#)
- “Symmetric Presentations of Coxeter Groups”, *Proc. Edinb. Math. Soc.* [arXiv:1104.5595v1](#)

- In print

- “Recent Progress in the Symmetric Generation of Groups”, proceedings of the conference ‘*Groups St Andrews 2009*’ (2011) [arXiv:1004.2272](#)
- “Some Design Theoretic Results on the Conway group  $\cdot 0$ ”, *Electron. J. Combin.* 17(1) (2010)
- “Symmetric Representation of the Elements of the Conway Group  $\cdot 0$ ” with RT Curtis, *J. Symbolic Comput.*, **44** (2009) 1044-1067
- “Symmetric Generation of Coxeter Groups” with J Müller, *Arch. Math. (Basel)* **93** (2009), 1-10, [arXiv:0901.2660](#)
- “A Note on Monomial Representations of Linear Groups”, *Comm. Algebra*, **37:12** (2009) 4269-4277

- Other

- “Some Exceptional Beauville Structures”, submitted to the *J. Algebra*, [arXiv:1007.5050](#)
- “Generation of finite simple groups with an application to groups acting on Beauville surfaces” with K Magaard and CW Parker, preprint 2010 [arXiv:1010.3500](#)
- “Some real Beauville surfaces from the groups of Lie type”, in preparation
- “The exact spread of  $M_{23}$  is 8064”, preprint 2010 [arXiv:1008.1503](#)
- “Sets of non-commuting elements in finite simple groups” with SM Goodwin, in preparation
- “Symmetric Generation of the Mathieu group  $M_{12}$ ” with JN Bray and JD Bradley, in preparation

#### SELECTED INVITED TALKS

- “Strongly real Beauville structures”, algebra and geometry seminar, Bristol, May 2010
- “Some curves, some surfaces and the groups that act on them”, Colloquium, Universidad de los Andes, Aug 2010
- “Some Groups, Some Surfaces and Strong Reality”, Aberdeen algebra seminar, Feb 2010
- “Spreads of Sporadic Groups”, QMUL Pure Mathematics Colloquium, Oct 2009
- “Computing in Sporadic Groups: An Application of Symmetric Generation”, *Groups St Andrews*, Bath, Aug 2009
- “Extensions of Symmetric Generating Sets”, British Mathematics Colloquium, Galway, Apr 2009

- “Symmetric Generation of Not-So-Finite (Real) Reflection Groups”, LMS “Groups and their Applications” Triangle Meeting, Manchester, Feb 2009
- “Symmetric Presentations of Coxeter Groups”, Conference in Honour of George Glauberman, Chicago, Mar 2008

#### MEMBERSHIP OF LEARNED OR PROFESSIONAL SOCIETIES

- Member of the London Mathematical Society
- Member of the Isaac Newton Institute
- Mentor for the United Kingdom Mathematics Trust

#### PRIZES AND AWARDS

- Winner of the British Mathematics Colloquium postgraduate poster competition, 2009
- Grant from the Isaac Newton Institute to attend meeting “Algebraic Lie Theory”
- EPSRC Research Studentship - University of Birmingham 2005-2009

#### PROFESSIONAL ACTIVITIES

- I have refereed for various journals including the *Journal of Algebra* and the *Indian Journal of Mathematics*.
- I am a reviewer for the American Mathematical Society’s *Mathematical Reviews*. (MR2519572; MR2529448; MR2548441; MR2560906; MR2550241; MR2570939; MR2564841; MR2584995; MR2629936)
- Computer proficiency: experience in the use of the algebra packages MAGMA and GAP as well as a working knowledge the languages C++, HTML and of  $\text{\LaTeX}$ . I have also used WebCT as part of my teaching duties.
- Committee experience: served on several committees in the University of Birmingham including the Mathematics School Committee and the Graduate School Council.
- Language skills: native speaker of English, some knowledge of Spanish.
- Organizer of the Universidad de los Andes “seminario de álgebra”, Aug-Dec 2010
- Co-organizer of the Postgraduate Group Theory conference 2007
- Co-organizer of the Birmingham postgraduate seminar series 2006-2007
- Organizer of the Birmingham postgraduate Group Theory study group, Winter 2006

#### SELECTED CONFERENCES ATTENDED

Geometric Presentations of Finite and Infinite Groups, Birmingham, July 2011

One day meeting on Iwasawa Algebras, Cambridge, June 2011

One day meeting on The McKay and Broué Conjectures, Southampton, April 2011

One day meeting on The Symmetric Group, Royal Holloway, March 2011

Instructional Workshop on Moduli Spaces, Isaac Newton Institute, Jan 2011

One day meeting on Cluster Algebras, University of Leeds, June 2010

12<sup>th</sup> Postgraduate Group Theory Conference, St Andrews, June 2010

LMS midlands regional meeting, Leicester, Sep 2009  
Summer School on Finite Simple Groups and Algebraic Groups, Berlin, Sep 2009  
Groups St Andrews, Bath, Aug 2009  
Groups and computation meeting, Warwick, July 2009  
British Mathematics Colloquium, Galway, Apr 2009  
LMS Groups and Representations triangle meeting, Manchester, Feb 2009  
Instructional Workshop on Algebraic Lie Theory, Isaac Newton Institute, Cambridge, Jan 2009  
Representations of finite groups of Lie type and their subgroups, Birmingham, Dec 2008  
LMS Groups and Representations triangle meeting, QMUL, Oct 2008  
LMS/EPSRC short instructional course on Algebraic groups and related topics, Sep 2008  
Summer School on Finite Groups and related Geometric Structures, Venice, Italy, Sep 2008  
LMS midlands regional meeting, Birmingham, June 2008  
10<sup>th</sup> Postgraduate Group Theory Conference, Oxford, Apr 2008  
Conference in honour of George Glauberman, Chicago, Mar 2008  
LMS Groups and Representations triangle meeting, Birmingham, Nov 2007  
North British Geometric Group Theory network Meeting, Manchester, Oct 2007  
Rob Curtis' 60<sup>th</sup> birthday conference, Birmingham, Sep 2007  
Summer School on Finite Groups and related Geometric Structures, Venice, Italy, Sep 2007  
Summer school on Fusion systems, Birmingham, July/Aug 2007  
LMS Groups and Representations triangle meeting, Birmingham, June 2007  
Peter Cameron's 60<sup>th</sup> birthday conference, Ambleside, Aug 2007  
LMS Groups and Representations triangle meeting, Manchester, Feb 2007  
50 years of the Hall-Higman theorem conference, Oxford, Jan 2007  
LMS Groups and Representations triangle meeting, Birmingham, Nov 2006  
Summer School on Finite Groups and related Geometric Structures, Dobiaco, Italy, Aug/Sept 2006  
Charles-Leedham Green's Birthday conference, QMUL, June 2006  
LMS midlands regional meeting, Leicester, May 2006  
One day meeting on Reductive Groups and their Representations, Oxford, Apr 2006  
British Mathematics Colloquium, Newcastle, Apr 2006  
LMS Groups and Representations triangle meeting, Imperial, Feb 2006  
LMS Groups and Representations triangle meeting, Birmingham, Nov 2005