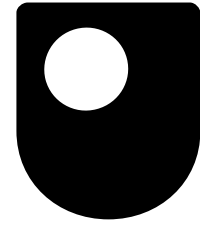


**School of Mathematics and  
Statistics**

Faculty of Science, Technology, Engineering and  
Mathematics



**The Open  
University**

**Mathematics Research Report  
2017**



## Foreword

Welcome to the 2017 Mathematics Research Report, which covers the Pure, Applied, History, and Mathematics Education groups in the School of Mathematics and Statistics, in the Faculty of Science, Technology, Engineering and Mathematics, at The Open University. The Statistics group publishes its own annual report series, see <http://mathematics.open.ac.uk/research/statistics/annual-reports>.

Public engagement and outreach activities have always played a core part of our research-related activities, and this year was no exception. Of particular note in 2017 were the activities of our historians of mathematics: June Barrow-Green continues her busy schedule of invited talks, including public lectures in LSE and here in Milton Keynes when the M500 Revision Weekend came to us in May. No less were the activities of her students: Brigitte Stenhouse joined us as a PhD student in October to look at the mathematics of Mary Somerville, and has already spoken about Somerville in Edinburgh at the Royal Bank of Scotland's launch of its new £10 note (featuring Somerville), as well as appearing on the BBC's *Antiques Road Trip*. Tony Royle, meanwhile, published an article entitled "The heartbreaking story of the flying mathematicians of World War I" in *The Conversation*, which was subsequently picked up by several outlets, including *The Times*, and the *i* newspaper, and it was even translated for use in Brazil. If you haven't yet read it, it is also now available as a podcast from *The Conversation* website.

This year we are pleased to welcome two new members of staff in Mathematics Education: Sue Forsythe and Cathy Smith. It has been great to see this group getting reinvigorated, and you will see that a number of our seminars have been given by mathematical education specialists this year.

2017 also saw the School of Mathematics and Statistics develop its social media profile. You can now follow us on Twitter @OUMathsStats, and "like" our Facebook page: <https://www.facebook.com/OUMathsStats/>.

Robert Brignall (Director of Research)

## Membership of Mathematics Groups

### Academic Staff

Silvia Barbina, Staff Tutor  
June Barrow-Green, Professor  
Robert Brignall, Senior Lecturer  
Katie Chicot, Senior Lecturer and Staff Tutor  
Sally Crighton, Senior Lecturer and Staff Tutor  
Sue Forsythe, Senior Lecturer  
Martina Gibbons, Staff Tutor  
Gerry Golding, Senior Lecturer and Staff Tutor  
Derek Goldrei, Associate Member  
Uwe Grimm, Head of School  
Robert Hasson, Senior Lecturer  
Hilary Holmes, Senior Lecturer and Staff Tutor  
Chris Hughes, Staff Tutor  
Tim Lowe, Senior Lecturer  
Sarah Mattingly, Senior Lecturer and Staff Tutor  
Angie McConnell, Lecturer  
Ben Mestel, Senior Lecturer  
Toby O'Neil, Senior Lecturer  
Sue Pawley, Staff Tutor  
Marc Pradas, Lecturer  
Brendan Quinn, Senior Lecturer and Staff Tutor  
Kathleen Quinn, Senior Lecturer  
Philip Rippon, Professor  
Katrine Rogers, Staff Tutor  
Hayley Ryder, Staff Tutor  
Ian Short, Senior Lecturer  
Jozef Širáň, Professor  
Cathy Smith, Senior Lecturer  
Gwyneth Stallard, Professor  
Claudi Thomas, Senior Lecturer and Staff Tutor  
Andrey Umerski, Senior Lecturer  
Paul Upton, Lecturer  
Bridget Webb, Senior Lecturer  
Charlotte Webb, Lecturer  
Michael Wilkinson, Professor  
Gareth Williams, Senior Lecturer and Staff Tutor

### Admin staff

Sally Gallagher, Senior Manager  
Sara Griffin, Secretary  
Tracy Johns, School Office Team Leader

### Emeritus Professor

David Brannan  
Jeremy Gray  
Mike Grannell  
Terry Griggs  
John Mason  
Robin Wilson

### Visiting Research Staff

Barbara Allen, Visiting Senior Lecturer  
Michael Baake, Visiting Research Professor  
Mick Bromilow, Visiting Research Fellow  
David Crowe, Visiting Research Fellow  
Grahame Erskine, Visiting Research Fellow  
Tony Forbes, Visiting Research Fellow  
Gerard Hayes, Visiting Research Fellow  
Fred Holroyd, Visiting Research Fellow  
Matthew Jacques, Visiting Research Fellow

### Research students

Lax Chan, Full-time  
Argyris Christodoulou, Full-time  
Ioannis Dourekas, Full-time  
Alex Durie, Part-time  
Michael Ewetola, Full-time  
Valentin Fadeev, Part-time  
James Fraser, Full-time  
John Grant, Part-time  
Olivia Jeans, Part-time  
Robert Lewis, Part-time  
Christopher Lynch, Part-time  
Alison Maidment, Full-time  
David Marchant, Part-time  
Tony Royle, Full-time  
Jakub Sliacan, Full-time  
Margaret Stanier, Part-time  
Brigitte Stenhouse, Full-time  
James Tuite, Part-time  
James Waterman, Full-time

## Visitors

<b>Robert Brignall</b>	Prof Nik Ruskuc (University of St Andrews), 15 – 19 May Dr David Bevan (University of Strathclyde), 28 – 30 November
<b>Terry Griggs</b>	Professor Martin Skoviera (Comenius University, Slovakia) 13 – 15 January Professor Edita Macajova (Comenius University, Slovakia) 13 – 15 January Professor Ales Drapal (Charles University, Czech Republic) 6 – 9 February
<b>Uwe Grimm</b>	Professor Michael Baake (University of Bielefeld, Germany), 6 – 9 April and 13 – 20 July
<b>Phil Rippon, and Gwyneth Stallard</b>	Vassiliki Evdoridou (IMPAN, Warsaw), 5 – 8 September David Marti-Pete (RIMS, Kyoto), 16 – 20 October Dave Sixsmith (Liverpool), 7 – 8 November
<b>Jozef Širáň</b>	Professor Miguel Angel Fiol (Polytechnic University of Barcelona), 4 – 9 June
<b>Charlotte Webb</b>	Dr Alf Coles (University of Bristol), 7 January Tom Briggs (Bletchley Park), 30 May Dr Tom Hunt (University of Derby), 10 October Dr Dave Hewitt (Loughborough University), 24 October

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## Visits to other institutions

<b>Robert Brignall</b>	University of St Andrews, January, April and June
<b>Terry Griggs</b>	Comenius University, Bratislava, Slovakia, September
<b>Uwe Grimm</b>	University of Tasmania, Hobart, Australia, February/March University of Bielefeld, Germany, June/July
<b>Ian Short</b>	Newcastle University, December
<b>Jozef Širáň</b>	University of Auckland, New Zealand, February
<b>Cathy Smith</b>	University of Witwatersrand, November University College London, London Knowledge Lab, December
<b>Margaret Stanier</b>	Southampton University, November
<b>Charlotte Webb</b>	Bristol University, School of Education, January Loughborough University, Mathematics Education Centre, May

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## Research degrees awarded

**Grahame Erskine**, Ph.D., for his thesis *Diameter, girth and other properties of highly symmetric graphs*. Supervisor: Jozef Siran.

**George Matthew** Ph.D. for his thesis *Sustainable Low-Carbon Isolated Island Electricity Systems - Policy and Investment Impacts Assessed Using System Dynamics*. Supervisors: William Nuttall, Ben Mestel, Laurence Dooley

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## Grants awarded

**Tim Lowe**, Collaborative award for teaching excellence, £15,000, Higher Education Academy

**Gwyneth Stallard** (PI), **Phil Rippon** (CI) Classifying wandering domains, £390,936, EPSRC Responsive Mode

**James Tuite**, LMS Early Career Research Travel Grant, £500

**Charlotte Webb**, Girls in Maths grant, £500, London Mathematical Society

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## Editorial roles

<b>June Barrow-Green</b>	Historia Mathematica (Editorial Board Member) Revue d'histoire des Mathématiques (Editorial Board Member) Philosophia Scientiæ (Editorial Board Member) BSHM Bulletin (Editorial Board Member) AMS History of Mathematics series (Editorial Board Member) Birkhäuser's Science Networks. Historical Studies series (Editorial Board Member) LMS Newsletter (Editorial Board Member)
<b>Robert Brignall</b>	Australasian Journal of Combinatorics (Managing Editor) Discrete Mathematics and Theoretical Computer Science (Guest Editor for Permutation Patterns 2015)
<b>Toby O'Neil</b>	Editorial Advisor for London Mathematical Society
<b>Ian Short</b>	Bulletin of the Irish Mathematical Society (Editorial Board Member)
<b>Jozef Širáň</b>	Journal of Combinatorial Theory Series B (Editorial Board Member) Australasian Journal of Combinatorics (Editorial Board Member)
<b>Cathy Smith</b>	Research in Mathematics Education (Editorial board member) Teaching Mathematics and its Applications (Editor)
<b>Gwyneth Stallard</b>	Proceedings of the Edinburgh Mathematical Society (Subject Editor)
<b>Charlotte Webb</b>	Science of Education publication for ATM (Editorial team member)

## Publications

- Archdeacon, Dan; **Griggs, Terry S.** and Psomas Constantinos (2017). Representing graphs in Steiner triple systems - II. *Australas. J. Combin.*, **67** pp. 243 – 258.
- Baake, Michael and **Grimm, Uwe** (2017). Diffraction of a binary non-Pisot inflation tiling. *Journal of Physics: Conference Series*, **809(1)**, article no. 012026.
- Barbina, Silvia** and **Chicot, Katie** (2017). A Classification of Countable Lower 1-transitive Linear Orders. *Order* (Early Access).
- Bevan, David; **Brignall, Robert**; Price, Andrew Elvey and Pantone, Jay (2017). Staircases, dominoes, and the growth rate of 1324-avoiders. In: *Electronic Notes in Discrete Mathematics*, **61** pp. 123–129.
- Bevan, David; **Erskine, Grahame** and **Lewis, Robert** (2017). Large circulant graphs of fixed diameter and arbitrary degree. *Ars Mathematica Contemporanea*, **13(2)** pp. 275–291.
- Brignall, Robert**; Korpelainen, Nicholas and Vatter, Vincent (2017). Linear Clique-Width for Hereditary Classes of Cographs. *Journal of Graph Theory*, **84(4)** pp. 501–511.
- Brignall, Robert** and **Sliacan, Jakub** (2017). Juxtaposing Catalan Permutation Classes with Monotone Ones. *Electronic Journal of Combinatorics*, **24(2)**, article no. 2.11.
- Cavenagh, Nick and **Griggs, Terry S.** (2017). Subcubic trades in Steiner triple systems. *Discrete Math.*, **340** pp. 1351 – 1358.
- Chan, Lax** and **Grimm, Uwe** (2017). Spectrum of a Rudin-Shapiro-like sequence. *Advances in Applied Mathematics*, **87** pp. 16–23.
- Chan, Lax** and **Grimm, Uwe** (2017). Substitution-based sequences with absolutely continuous diffraction. *Journal of Physics: Conference Series*, **809(1)**, article no. 012027.
- Chicot, Katie M.** and Truss, John K. (2017). Countable 1-transitive trees. In: Droste, Manfred; Fuchs, László; Goldsmith, Brendan and Strüngmann, Lutz eds. *Groups, Modules and Model Theory - Surveys and Recent Developments, in Memory of Rüdiger Göbel*. Springer International Publishing AG, (In Press).
- Donovan, Diane M. and **Grannell, Mike J.** (2017). On the number of transversals in a class of Latin squares. *Discrete Applied Mathematics* (Early view).
- Drapal, Ales; **Griggs Terry S.** and Kozlik, Andrew (2017). Flexible Latin directed triple systems. *Utilitas Math.*, **104** pp. 31 – 46.
- Erskine, Grahame** (2017). Mixed Moore Cayley Graphs. *Journal of Interconnection Networks*, **17(03n04)**, article no. 1741010.
- Forbes, Tony**; Forbes, Tamsin and **Griggs, Terry S.** (2017). Archimedean graph designs - II. *Discrete Math.*, **340** pp. 1598 – 1611.
- Forbes, Tony**; Forbes, Tamsin and **Griggs, Terry S.** (2017). Theta Graph Designs. *J. Algorithms & Comput.*, **49** pp. 1 – 16.

## Publications, continued

- Forsythe, Susan** (2017). How do some teachers of primary mathematics view the impact of the Singapore textbook schemes? *Primary Mathematics*, **21(1)** pp. 9–14.
- Gomes, S.N.; Kalliadasis, S.; Papageorgiou, D.T.; Pavliotis, G.A. and **Pradas, M.** (2017). Controlling roughening processes in the stochastic Kuramoto–Sivashinsky equation. *Physica D: Nonlinear Phenomena*, **348** pp. 33–43.
- Gotoda, Hiroshi; **Pradas, Marc** and Kalliadasis, Serafim (2017). Chaotic versus stochastic behavior in active-dissipative nonlinear systems. *Physical Review Fluids*, **2**, article no. 124401.
- Grimm, Uwe** (2017). Aperiodic Order. In: Bullett, Shaun; Fearn, Tom and Smith, Frank eds. *Dynamical and Complex Systems. LTCC Advanced Mathematics Series (5)*. London: World Scientific Europe, pp. 41–80.
- Kawagoe, Kyle; Huber, Greg; **Pradas, Marc**; **Wilkinson, Michael**; Pumir, Alain and Ben-Naim, Eli (2017). Aggregation-fragmentation-diffusion model for trail dynamics. *Physical Review E*, **96**, article no. 012142.
- Kouchakinejad, Fateme; Šipošová, Alexandra and **Širáň, Jozef** (2017). Aggregation functions with given super-additive and sub-additive transformations. *International Journal of General Systems*, **46(3)** pp. 225–234.
- Lewis, Robert R** (2017) Improved Upper Bounds for the Order of Some Classes of Abelian Cayley and Circulant Graphs of Diameter Two, *Journal of Interconnection Networks*, **17(03n04)**, article no 1741012
- Lynch, Christopher** and **Mestel, Benjamin** (2017). Logistic model for stock market bubbles and anti-bubbles. *International Journal of Theoretical and Applied Finance*, **20(6)**, article no. 1750038.
- Matthew, George Jr.; Nuttall, William J.; **Mestel, Ben** and Dooley, Laurence S. (2017). A dynamic simulation of low-carbon policy influences on endogenous electricity demand in an isolated island system. *Energy Policy*, **109** pp. 121–131.
- Mestel, B. D.** (2017). Optimal battery charge/discharge strategies for prosumers and suppliers. *Energy Systems*, **8(3)** pp. 511–523.
- Pradas, Marc**; Pumir, Alain; Huber, Greg and **Wilkinson, Michael** (2017). Convergent Chaos. *Journal of Physics A: Mathematical and Theoretical*, **50(27)**, article no. 275101.
- Rippon, Philip** and **Stallard, Gwyneth** (2017). Boundaries of univalent Baker domains. *Journal d'Analyse Mathématique* (In Press).
- Rippon, Philip J.**; Sixsmith, David J. and Barth, Karl F. (2017). The MacLane class and the Eremenko–Lyubich class. *Annales Academiæ Scientiarum Fennicæ Mathematica*, **42** pp. 859–873.
- Royle, Tony** (2017). The impact of women of the Technical Section of the Admiralty Air Department on the structural integrity of aircraft during World War One. *Historia Mathematica*, **44 (4)**, pp. 342–366



## Publications, continued

**Royle, Tony** (2017). The heartbreaking story of the flying mathematicians of World War 1. *The Conversation*, 10 August.

Šipošová, Alexandra; Šipeky, Ladislav and **Širáň, Jozef** (2017). On the existence of aggregation functions with given super-additive and sub-additive transformations. *Fuzzy Sets and Systems*, **324** pp. 117–126.

**Smith, Cathy** (2017). [Book Review] Disaffection with school mathematics. *Research in Mathematics Education*, **19(1)** pp. 97–101.

**Smith, Cathy** and Golding, Jennie (2017). Gender and Participation in Mathematics and Further Mathematics: Final Report for the Further Mathematics Support Programme. *Further Mathematics Support Programme*.

**Smith, Cathy** and Golding, Jennie (2017). Teaching A-level Mathematics in Early Career: Report for the Further Mathematics Support Programme. *Further Mathematics Support Programme*.

**Tuite, James** (2017). On diregular digraphs with degree two and excess two. *Discrete Applied Mathematics*, **238** pp. 167-174.

Wanless, Ian M. and **Webb, Bridget S.** (2017). Small Partial Latin Squares that Cannot be Embedded in a Cayley Table. *Australasian Journal of Combinatorics*, **67(2)** pp. 352–363.

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## Conferences/meetings organised by members of the School

Open Statistical Physics 2017, Open University, March. Organisers: **Michael Wilkinson, Uwe Grimm, Marc Pradas, Paul Upton**

Symposium on ‘The resurgence of applied mathematics 1850-1950: national and international, academic, industrial and military contexts’, XXV International Congress of History of Science and Technology, Rio de Janeiro, July. Organisers: **June Barrow-Green**, Reinhard Siegmund-Schultze, Renate Tobies.

Mathematics Education beyond 16: Pathways and Transitions: a conference of the IMA, CETL-MSOR and Teaching Mathematics and its Applications, University of Birmingham, July (**Sue Forsythe** member of organising committee and lead for joint working group)

The 29th international conference on Formal Power Series and Algebraic Combinatorics FPSAC 2017, Queen Mary University of London, London, UK, July (**Uwe Grimm** member of organising committee)

Graph Embedding and Maps on Surfaces conference, Podbanske, Slovakia, July/August. Organisers Gareth Jones (Southampton), Roman Nedela (Pilsen), Martin Skoviera (Bratislava) and **Jozef Širáň**

## Invited seminars and talks given

- June Barrow-Green**     *“Knowledge gained by experience”*: Olaus Henrici - engineer, geometer and maker of mathematical models, AMS/MAA Joint Meeting, Atlanta, January  
*The Mathematical World of William De Morgan*, Sublime Symmetry Symposium, London, January  
*Mathematicians at War*, LSE Public Lecture, London School of Economics, March  
*Charlotte Scott and Philippa Fawcett. 19<sup>th</sup> Century Women Trailblazers in the Cambridge Mathematical Tripos*, Winton Women Trailblazers in Mathematics Conference, Birkbeck/Winton, March  
*Mathematicians at War*, OU M500 Meeting, Milton Keynes, May
- Robert Brignall**     *Staircases, dominoes and the growth rate of 1324 avoiders*, Scottish Combinatorics Meeting, St Andrews, Scotland, April
- Terry Griggs**     *Representing graphs in Steiner triple systems*, Workshop – Graph Theory in Modra, Slovakia, September
- Uwe Grimm**     *Aperiodic crystals and beyond*, University of Tasmania, Hobart, February
- Tim Lowe**     *STACK: Computer-aided assessment for mathematics*, Open University eLearning Community, January
- Marc Pradas**     *Droplets with dynamic size on smooth surfaces: Snaps, hysteresis, and random walks*, King's College London, October
- Phil Rippon**     *Eremenko points and the structure of the escaping set*, Liverpool, May
- Tony Royle**     *The Perilous Practice of ‘Flying and Applying’*, School of Physics and Astronomy Seminar, University of Southampton, October  
*Spinning, Stalling, Falling Apart*, Mathematical Institute, Oxford, November  
*The Perilous Practice of ‘Flying and Applying’*, History of Mathematics Seminar, University of St Andrews, November
- Ian Short**     *Coxeter’s frieze patterns, the modular group and the Farey graph*, University of South Wales, February  
*Dynamics of isometries of the hyperbolic plane*, University of Leeds, March  
*Coxeter’s friezes, the modular group and the Farey graph*, University of Southampton, November
- Jozef Širáň**     *Regular maps on twisted linear groups*, University of Auckland, New Zealand, February
- Cathy Smith**     *Articulating pedagogic messages for learning to teach (pre-university) mathematics*, University of Witwatersrand, South Africa, November
- Gwyneth Stallard**     *Complex analysis and complex dynamics: fruitful interactions*, LMS General Meeting, June  
*Commuting functions and wandering domains*, University of Southampton, March
- Bridget Webb**     *Some new homogeneous and set-homogeneous Steiner triple systems*, University of South Wales, March

## Conference & workshop papers and posters given

- June Barrow-Green**     *From skeleton structures to geometrical surfaces: the mathematical models of Olaus Henrici*, Picturing Mathematics, BSHM/Rewley House, Oxford, June  
*“An exquisite machine”*: *Olaus Henrici’s harmonic analyser*, XXV International Congress of History of Science and Technology, Rio de Janeiro, July  
*“An exquisite machine”*: *Olaus Henrici’s harmonic analyser*, Mathematisches Forschungsinstitut Oberwolfach, Germany, December
- Robert Brignall**     *Characterising inflations of monotone grid classes of permutations*, 15th International Conference on Permutation Patterns, Reykjavik, Iceland, June  
*Staircases, dominoes and the growth rate of 1324 avoiders*, European Conference on Combinatorics, Graph Theory and Applications (EUROCOMB’17), Vienna, Austria, August
- Sue Forsythe**     *Developing Effective Learning Circles: An account of how pre-service teachers participated in a shared dialogue of a team teaching experience*, ECER, Copenhagen, Denmark, August
- Terry Griggs**     *Pentagonal Geometries*, 26th British Combinatorial Conference, Glasgow, July.
- Uwe Grimm**     *Mathematics and aesthetics: Order and symmetry in tessellations*, Workshop Michael Schreiber, TU Chemnitz, Germany, April  
*Spectral notions of aperiodic order*, SIAM Conference on Applications of Dynamical Systems, Snowbird, Utah, USA, May  
*Substitution-based structures with absolutely continuous spectrum*, Aperiodic Patterns in Crystals, Numbers and Symbols, Lorentz Center, Leiden, The Netherlands, June  
*Spectral properties of aperiodic structures*, Workshop in Ergodic Theory & Dynamical Systems (with a view towards Number Theory), London, September  
*Spectral properties of aperiodic structures*, Workshop on Aperiodicity and Hierarchical Structures in Tilings, Lyon, France, September
- Uwe Grimm**     *Autocorrelation and diffraction via renormalisation. Part I: Concepts and examples in one dimension*, Tilings and Recurrence, CIRM Luminy, Marseille, France, December
- Robert Lewis**     *A family of largest-known degree 15 circulant graphs of arbitrary diameter*, The Second Malta Conference in Graph Theory and Combinatorics, Qawra, Malta, June
- David Marchant**     *The Möbius function of increasing oscillations*, 15th International Conference on Permutation Patterns, Reykjavik University, June  
*Permutations, Grids and the Möbius function*, Postgraduate day, The Open University, December
- Ben Mestel**     *Functional difference equations arising from renormalization in quasiperiodic systems*, The 23rd International Conference on Difference Equations and Applications - ICDEA 2017, Timisoara, Romania, July

## Conference & workshop papers and posters given, continued

- Toby O'Neil**      *Measuring anisotropy in planar sets*, Summer Symposium in Real Analysis XLI (Black squirrel symposium), College of Wooster, Ohio, June (featured talk)
- Susan Pawley**      *Bridging the study gap: Provision of online support between two level one mathematics modules*, Workshop, Esteem Conference, Open University, April
- Marc Pradas**      *Noise induced phenomena in rugged energy landscapes*, XLVI Winter Meeting on Statistical Physics, Taxco (Mexico), January (invited lecture).
- Phil Rippon**      *The structure of the escaping set of a transcendental entire function*, Workshop on complex dynamics, Kyoto, December
- Katrine Rogers**      *Optimising super-oscillations for optical imaging*, The Physics and Technology of Superoscillations, Institute of Physics, London, October  
*Super-oscillations for sub-wavelength focussing*, Innovations in Wave Modelling, Nottingham, July
- Tony Royle**      *The Perilous Practice of 'Flying and Applying'*, AMS/MAA Joint Mathematics Meeting, Atlanta, January  
*The Perilous Practice of 'Flying and Applying'*, BSHM Research in Progress, Queen's College, Oxford, February  
*The Perilous Practice of 'Flying and Applying'*, SIAM-IMA Chapter Conference, University of Manchester, May  
*The Mathematics of Fixed-Wing Aeronautics in the Public Domain in Britain 1900-1920*, 25th ICHST, Rio de Janeiro, July  
*Spinning, Stalling, Falling Apart*, Novembertagung, Brussels, November  
*The Impact of the Women of the Technical Section of the Admiralty Air Department on the Structural Integrity of Aircraft during World War One*, History of Women in Engineering in the UK Conference, IET Savoy Place, London, November.
- Jozef Širáň**      *Regular and bi-rotary maps of negative prime Euler characteristic*, British Combinatorial Conference, Glasgow, July
- Cathy Smith**      *The transmission of mathematics mastery as a new pedagogic culture* (with Candia Morgan). British Educational Research Association, September  
*Preparing for Advanced Mathematics Teaching in Early Career* (with Nicola Bretscher). Mathematics Education beyond 16: Pathways and Transitions: a conference of the IMA, CETL-MSOR and Teaching Mathematics and its Applications, July  
*Teachers' knowledge about assessing and teaching for semi-structured questions development and challenges* (with Jennie Golding). Mathematics Education beyond 16: Pathways and Transitions: a conference of the IMA, CETL-MSOR and Teaching Mathematics and its Applications, July
- Gwyneth Stallard**      *Wandering domains and commuting transcendental entire functions*, Workshop on Complex Dynamics, RIMS, Kyoto, December
- Brigitte Stenhouse**      *The Mathematics of Mary Somerville*, Novembertagung 2017, Brussels, November

## Conference & workshop papers and posters given, continued

- James Tuite**      *Searching for digraphs with small excess*, The Second Malta Conference in Graph Theory and Combinatorics, Qawra, Malta, June
- Diregularity of extremal networks*, 26th British Combinatorial Conference, Glasgow, July
- Bridget Webb**      *Countably infinite homogeneous STS*, 26th British Combinatorial Conference, Glasgow, July
- Charlotte Webb**      *The role of mastery, problem solving and conjecturing as part of a learning mathematics journey*. Association of Teachers of Mathematics Conference. Stratford upon Avon, April
- Using a theoretical framework in classroom based research*. BERA special interest group: Practitioner research. London, June
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## Mathematics seminars hosted by the School

In 2017, 32.3% of our seminar speakers were women.

- 10 January, Alan Beardon (University of Cambridge) *Tessellations in geometry, analysis and number theory*
- 17 January, Anna Pratoussevitch (University of Liverpool) *Discreteness of Ultra-Parallel Complex Hyperbolic Triangle Groups*
- 24 January, Jeffrey Giansiracusa (Swansea University) *A survey of topology and data*
- 31 January, Katherine Staden (University of Warwick) *The number of triangles in a graph with a given number of vertices and edges*
- 7 February, Alf Coles (University of Bristol) *Mastering mathematical concepts*
- 21 February, June Barrow-Green (The Open University) *“Knowledge gained by experience”: Olaus Henrici – engineer, geometer, and maker of mathematical models*
- 28 February, John Mason (The Open University and the University of Oxford) *From Worked Examples via Key idea, Core Awarenesses and Variation to the Issue of Student Attention*
- 14 March, Ben Mestel (The Open University) *Quasiperiodic renormalisation for general rotation number*
- 28 March, Raul Hindov (Lund University) *Factoring integers with Ford circles and Dirichlet’s approximation with Short circles*
- 4 April, Chris MacMinn (University of Oxford) *The swelling and drying of a spherical gel*
- 25 April, Stephen Coombes (University of Nottingham) *Next generation neural field modelling*
- 2 May, Sandro Azaele (University of Leeds) *A spatial stochastic model for explaining macro-ecological patterns in species-rich ecosystems*
- 16 May, Alice Thompson (University of Manchester) *Feedback control of falling liquid films*
- 30 May, Thomas Briggs (Bletchley Park) *A brief history of Bletchley Park*

## Mathematics seminars hosted by the School, continued

- 13 June, Priya Subramanian (University of Leeds) *Formation and Spatial Localization of Phase Field Quasicrystals*
- 20 June, Holly Krieger (University of Cambridge) *Complex dynamics and the arithmetic of elliptic curves*
- 13 July, Argyris Christodoulou (The Open University) *Stability of the Denjoy–Wolff theorem*
- 13 July, Yannis Dourekas (The Open University) *Cantor bouquets in spiders' webs*
- 13 July, James Waterman (The Open University) *Iteration in tracts*
- 13 July, Jay Fraser (The Open University) *Determining possible Petrie dual walk lengths for a given set of regular maps*
- 5 September, Neil Manibo (University of Bielefeld) *Lyapunov Exponents and Absence of Absolutely Continuous Diffraction*
- 7 September, Vasiliki Evdoridou (University of Warsaw) *Inner functions and accesses to infinity from Fatou components*
- 12 September, Cathy Smith (The Open University) *Towards distinctive pedagogic messages for pre-university mathematics*
- 26 September, Katrine Rogers (The Open University) *Optimising super-oscillatory functions for sub-wavelength focussing in optical imaging*
- 3 October, Michael Wilkinson (The Open University) *Understanding rainfall: the role of turbulence and large deviation theory*
- 10 October, Thomas Hunt (University of Derby) *Mathematics anxiety: Causes, consequences, and strategies to reduce it*
- 17 October, David Martí Pete (University of Kyoto) *Fingers in the parameter space of the complex standard family*
- 24 October, Dave Hewitt (Loughborough University) *Designing software to address some common difficulties students experience: the case of Grid Algebra*
- 31 October, Bridget Webb (The Open University) *Some new homogeneous and set-homogeneous Steiner triple systems*
- 7 November, Dave Sixsmith (University of Liverpool) *On domains with connected pre-image*
- 14 November, Lucy Rycroft-Smith (Cambridge Mathematics) *What is Cambridge Mathematics and what are Espressos?*
- 21 November, Simon Albrecht (University of Liverpool) *Conjugacy classes of disjoint-type functions*
- 28 November, David Bevan (University of Strathclyde) *Permuted packings and prolific permutations*
- 14 December, Dominic Vella (University of Oxford) *Elastic instabilities: From Pizza to the Venus flytrap*
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## Other Activities

<b>June Barrow-Green</b>	Visiting Professor at London School of Economics Chair of the Executive Committee of the International Commission on the History of Mathematics; member of the ICHM May Medal Committee Member of LMS Council, Prizes Committee, and Standing Orders Review Group; LMS Librarian Member of BSHM Council, Chair of BSHM Neumann Prize Committee
<b>Katie Chicot</b>	LMS Holgate Lecturer UKMT council Maths section committee BSA Royal Institution Mathematics Masterclass Organiser
<b>Sue Forsythe</b>	Member of strategic committee of the East Midlands South Mathematics Hub
<b>Uwe Grimm</b>	Member of International Program Committee for the XXIV Congress and General Assembly of the International Union of Crystallography, Hyderabad, India, August Reporter at Spectral Structures and Topological Methods in Mathematical Quasicrystals, Mathematisches Forschungsinstitut Oberwolfach, Germany, October
<b>Chris Hughes</b>	Board member of National Network of Mathematics in Wales Royal Institution Mathematics Masterclass speaker
<b>Susan Pawley</b>	Royal Institute Masterclass Organiser, Bletchley Park series
<b>Phil Rippon</b>	Chair of BMC Scientific Committee
<b>Cathy Smith</b>	Member of Enigma Maths Hub Strategic Board
<b>Gwyneth Stallard</b>	Member of LMS Council, Research Grants Committee, Early Career Committee, Personnel Committee, Good Practice Scheme Steering Group Member of Judging Panel for L'Oréal Women in Science Fellowships
<b>Brigitte Stenhouse</b>	Interviewed about Mary Somerville on <i>Antiques Road Trip</i> , BBC1, October
<b>Bridget Webb</b>	Elected member of the BCC and archivist (until July)
<b>Charlotte Webb</b>	Member of the Outer Circle of the Association of Teachers of Mathematics

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