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## APPENDICES

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1. Overview

This has again been an excellent year for the Heilbronn Institute, which is now firmly established as one of the major mathematical research centres in the UK. HIMR has developed a strong reputation and is highly influential.

The Institute has an outstanding cohort of Heilbronn Research Fellows doing first-rate research. Recruitment of new Fellows continues to be encouraging, as is the fact that many distinguished senior academic mathematicians continue to work with us.

The research culture at HIMR is exceptional. Members have expressed a high level of satisfaction. This is especially the case with the Fellows, many of whom have chosen to extend their relationships with the Institute.

Our new Fellows come from leading mathematics departments and have excellent academic credentials. Those who left have moved to high-profile groups, including to prestigious permanent academic positions. We currently have 35 Fellows, hosted by 7 universities. We are encouraged by the improvement in the diversity of the cohort over recent years; for example, 9 of the 22 most recent appointments have been women.

The achievements of our Fellows this year again range from winning prestigious prizes to publishing in the elite mathematical journals and organising major mathematical meetings.
There has been a considerable increase over the past three years in the number of PhD students supported by HIMR. We are pleased that 70% are women. We are currently establishing a new Heilbronn Doctoral Training Partnership with the Universities of Bristol, Manchester and Oxford, in addition to our ongoing collaborations with several EPSRC Centres for Doctoral Training.

Members of HIMR produced a substantial number of papers on their external research during the review period. Many of these papers are of a highly impressive quality, and publications have appeared in a wide range of leading international journals, including *Annals of Applied Probability*, *Annals of Mathematics*, *Annals of Probability*, *Duke Mathematical Journal*, *Journal of the European Mathematical Society*, and the *Journal of the Royal Statistical Society*.

The external events organised by the Institute have been extremely successful, with a number of high quality Conferences, Workshops, and Focused Research Events. Last year we supported 37 events, which took place across the UK.

HIMR works closely with other major UK and international mathematics research institutes and organisations, including the American Institute of Mathematics, the Clay Mathematics Institute, the Alan Turing Institute, the International Centre for Mathematical Sciences, the Isaac Newton Institute, and the London Mathematical Society. In collaboration with the Clay Mathematics Institute, we have established a new series of Postgraduate Summer Schools, which got off to an excellent start this year with a school on Computational Number Theory, held in Bristol.

As other funding agencies are increasingly promoting applied and interdisciplinary research, and/or narrowing their focus, HIMR is playing a significant and visible role in supporting a broad spectrum of UK Mathematics and Early-Career Mathematicians. The academic community continues to value this highly.

HIMR is taking a leadership role with regard to several issues that are currently important to the UK mathematics community, including Knowledge Exchange and Impact. The Institute was held up as an example of best practice in the Independent Review of Knowledge Exchange in the Mathematical Sciences in the UK (*The Era of Mathematics*), led by Professor Philip Bond, and it is playing a major role in mapping out the community’s response to the report’s recommendations. One of the key recommendations of the review was that the idea of expanding the HIMR model should be explored and we are closely involved in discussions around this.
The planned expansion of HIMR is progressing well, with the establishment of a new group in Manchester.

The team at the University of Bristol that is responsible for HIMR’s external activities continues to make an outstanding contribution to the Institute’s success.

The quality of HIMR’s external activities and the visibility given to the external achievements of HIMR members contribute in a highly significant way to the Institute’s success by enhancing its attractiveness to the most able academic mathematicians.
2. **Profile**

HIMR’s reputation in the academic community is now well established. The successes of the Fellows and the quality of the external events supported by the Institute are widely appreciated. This is evidenced by the continuing increase in applications for Fellowships, participation in HIMR events, and requests for HIMR support, and by the quality of our partnerships and our involvement in major national mathematical initiatives.

The Focused Research Grant Scheme offers a distinctive funding opportunity that is widely valued. We received excellent proposals again last year. Those we funded are listed in Appendix E3. The reports we have received suggest that the events were highly successful.

The Institute was held up as an example of best practice in the Independent Review of Knowledge Exchange in the Mathematical Sciences in the UK (*The Era of Mathematics*) led by Professor Philip Bond. One of the key recommendations of the review was that the possibility of expanding the HIMR model should be explored. We are closely involved in discussions centred on developing a strategy to deliver against the recommendations made in the Review.
We have continued to collaborate with the American Institute of Mathematics, the Clay Mathematics Institute, the International Centre for Mathematical Sciences, the Isaac Newton Institute, the London Mathematical Society, and the Alan Turing Institute, for example in jointly running or co-funding events (see Section 4 for further details). In partnership with the Clay Institute we have established a new series of Postgraduate Summer Schools. The first, on Computational Number Theory, took place this year in Bristol. It was a considerable success. We are also collaborating with the Alan Turing Institute so that Heilbronn Fellows working in the area of Data Science can carry out their external research there.

HIMR has established a new research group in Manchester. Recruitment has gone well and the group is already up and running. It will continue to grow over the coming 2-3 years.

We are increasingly involved in advocacy for UK Mathematics and have a unique vantage point from which to comment. For example, we play a lead role in the STEM for Britain poster competition in Parliament. We were invited to have high-level involvement in the Review of Knowledge Exchange in the Mathematical Sciences referred to above, and we are now closely involved in planning the strategic response in the light of the report’s recommendations.

It is expected that work at HIMR will lead to a significant number of Impact Case Studies in the forthcoming REF. This makes us increasingly visible and attractive as a research partner.
3. Research

One of the primary aims of the Heilbronn Institute is to support the external research of its members by providing a stimulating environment and appropriate opportunities. We attract excellent mathematicians and enable them to carry out excellent research. A natural measure of the Institute’s performance in relation to this goal is therefore the quality of the papers produced by its members.

Members of the Institute produced reports on their external research in October 2019. We received 33 in total. They were asked to list papers produced in the period October 2018-September 2019, to identify which one of these papers they considered their best, giving reasons for their choice, and to list papers appearing in print during this period. The papers identified by members as their best are listed in appendix R1. The complete set of papers is listed in Appendix R2.

Four years ago we set ourselves the goal of increasing the number of papers of a quality consistent with publication in the elite journals in mathematics and statistics. Progress towards this goal is again encouraging: in the year under review, members of the Institute have published papers in Annals of Applied Probability, Annals of Mathematics, Annals of Probability, Duke Mathematical Journal, Journal of the European Mathematical Society, and the Journal of the Royal Statistical Society. In particular, a
paper written by one of the Heilbronn Fellows last year, which was published this year in *Annals of Mathematics* and which solved a problem raised by Serre, was the subject of an article in Quanta Magazine in which Professor Kiran Kedlaya, a distinguished American mathematician, described the main result as a “watershed moment”.

A major highlight this year was Professor Andrew Booker’s work on identifying numbers that can be written as sums of three cubes. His results have attracted considerable international attention.

The inclusion of Impact in the 2014 REF, in which context work at the Institute made a significant contribution, and the fact that it will be an even larger component of forthcoming REF, play to HIMR’s strengths. This is a distinct advantage in recruitment and in the career progression opportunities of our Fellows. We expect work at HIMR to lead to a significant number of Impact Case Studies in the forthcoming REF, and work is currently underway to prepare these for various submissions.

We note that members of HIMR produce a variety of research outputs, not just papers in academic journals. In particular, several members continue to make major contributions to the development of the *L-functions and Modular Forms Database (LMFDB)*. This is a high-profile database of important functions in number theory. Its development in the past was supported by the NSF, and by a Programme Grant from the EPSRC, run jointly by the universities of Bristol and Warwick. It is currently
supported by a grant from the Simons Foundation. The work of HIMR members in developing the LMFDB is, in international terms, a highly significant contribution to mathematical research.

In this context, Jonathan Bober is currently undertaking the first large-scale test of the Generalized Riemann Hypothesis for $L$-functions of degree $>1$ which do not come from elliptic curves. He previously collaborated with Professor Ghaith Hiary in testing the Riemann Hypothesis for the Riemann zeta function at what is presently the record for the largest height up the critical line. Numerical computations of this kind are highly visible internationally and HIMR is now closely identified with the best work in this area. The first CMI-HIMR Summer School, which ran in 2019, was in the area of Computational Number Theory.
4. Events

The Heilbronn Institute organises a number of research events throughout the year. These include a two-day annual conference and several workshops, meetings and working groups. They are of a high quality, attracting leading mathematicians and contributing significantly to the research environment and the Institute’s reputation.

The Annual Conference is central to the programme and in 2019 continued the tradition of having excellent and distinguished speakers: Melody Chan (Brown), Hugo Duminil-Copin (IHES), Emmanuel Kowalski (ETH), Holly Krieger (Cambridge), Kannan Soundararajan (Stanford), Leslie Valiant (Harvard), Bianca Viray (Washington) and Julia Wolf (Cambridge).

There were two Heilbronn Distinguished Lecture Series in 2019, given by Professors Jordan Ellenberg (Wisconsin-Madison) and Geordie Williamson FRS (Sydney). These lectures are organised by the University of Bristol in collaboration with HIMR. A new Heilbronn Visiting Professorship scheme was also started this year. The first holder was Professor Zeev Rudnick (Tel Aviv).

Last year we again offered Focused Research Grants. This has become a distinctive and highly successful scheme, leading to a number of interesting and adventurous events that we see as promoting the Institute’s ethos. Our ability to move quickly has enabled us to support several important Focused Research Events that have played a key role in developing new avenues of research.
We now regularly partner with other major mathematics research institutes, co-sponsoring workshops and other research events. Over the summer we again partnered with the Clay Mathematics Institute, providing support for two UK participants on the PROMYS Europe programme for highly gifted pre-university mathematicians. We continue to run workshops with the Alan Turing Institute and to provide support for workshops at the ICMS in Edinburgh and the Isaac Newton Institute in Cambridge. We have recently started a partnership with the Clay Mathematics Institute to establish a major new series of Postgraduate Summer Schools, the first of which was held this year.

HIMR also co-sponsors many events run throughout the UK, including the BMC, the Young Researchers in Mathematics conference, and various summer schools and smaller conferences. This support is increasingly popular, helped by our reputation for light-touch applications and quick decisions.
The increase in HIMR’s ability to support UK Mathematics is illustrated by the fact that between 2006 and 2015, HIMR supported around 35 events, i.e. roughly four per year; in 2015-16 we supported 26 events, in 2016-17 we supported 35 events, in 2017-18 we supported 37 events, and in 2018-19 we again supported 37 events.

We have a policy that at least 25% of the speakers at HIMR-run events should, wherever possible, be women, and we press organisers on this matter. In fact, most events now do better than this.

For events run by HIMR, we offer to cover any additional costs of childcare for children up to 14 years of age. This is proving to be an important component of the support we offer.

More information and a complete list of HIMR run and co-sponsored events are given in Appendices E1-E4.

The feedback we have received from the community about the events we run and support has been extremely encouraging. As other funders and Institutes increasingly prioritise interdisciplinary and applied research in mathematics, HIMR is seen more and more as a partner of choice for activities in Pure Mathematics and Probability.

Our focus on advertising HIMR events and opportunities for funding more effectively appears to be succeeding: we are experiencing a considerable increase in requests for support. All funding calls are listed on our website.
5. Personnel

Amongst HIMR’s central goals are: to attract leading mathematicians to work as senior Consultants and Secondees, and to ensure that their experience of the research environment is a highly rewarding one; to appoint the best postdoctoral researchers to Fellowships and to ensure that they benefit from excellent opportunities and mentoring that will enhance their career development.

Recruitment went exceptionally well again last year. We appointed 13 new Fellows and were encouraged that 4 of these were women (in the end one withdrew to take up a tenure-track position in the USA). We made 7 appointments in Bristol, including one in Data Science, three in London, and three in Manchester.

Current Secondees report that they are enjoying the experience of working at the Institute; several have expressed a wish to continue. The Fellows moving to permanent academic positions will continue to work with HIMR as Consultants.

The application pool for Fellowships was exceptionally strong again last year and we were able to be highly selective. We processed over 150 applications. Those involved were of the opinion that it was one of the strongest rounds HIMR has experienced.

We emphasize in our advertisements that we recruit Fellows from essentially all areas of Pure Mathematics, Probability and Statistics, and from areas involving theoretical Quantum Mechanics.
Details of current Fellows can be found on the Institute’s website. A list of new Fellows is given in Appendix P1, and a list of Fellows who have finished in the past year is given in Appendix P2.

At present we have Fellows in 7 Universities: Bristol, Imperial, King’s College London, Leicester, Manchester, Oxford, and University College London. Roughly two-thirds are based in Bristol.

HIMR offers the opportunity for Fellows coming to the end of their first three years to extend their Fellowships, for either one year or three. A one-year extension is normally held at the same host university, and a three-year extension normally (but not necessarily) involves a move.

The quality of the Fellows appointed this past year is excellent, especially given that HIMR only appoints from a small subset of mathematicians.
Fellows leaving HIMR continue to move on to good academic positions elsewhere, or to good positions outside academia. Over the past 10 years, most Fellows have stayed in academia, and the majority of those continuing now have permanent or tenure-track appointments. Former Fellows have in recent years gained permanent appointments in the mathematics departments at Durham, Exeter, Heriot Watt, Lancaster, Leeds, Leicester, the Open University, Royal Holloway, Sheffield, UCL, Warwick, and York.

We have created a strategic fund to which members of HIMR can apply for support for specific research projects. A number were funded last year and we believe that this helped accelerate promising lines of research. The intention is to continue this scheme.

Increasing the number of female Fellows remains a major goal. We were pleased to have appointed 9 over the past two years and would like to see the number continue to increase. The referral reward scheme we introduced two years ago has been a noteworthy success.
We have a scheme to support PhD study for women mathematicians who want to work at HIMR. This supported five women last year. HIMR currently supports 10 PhD students, 7 of whom are women.

HIMR funds students involved in three EPSRC Centres for Doctoral Training: the London CDT in Geometry and Number Theory (currently three students), the Bristol CDT in Quantum Engineering (currently one student), and the CDT associated with the EPSRC-funded Data Innovation Research Institute, led jointly by Cardiff University, the University of Bristol, and Swansea University (currently three students).

In addition to this, we have initiated a new Heilbronn Doctoral Training Partnership, involving the Universities of Bristol, Manchester and Oxford. HIMR will support 4 new PhD students each year, with our partners providing another 4. Students funded by HIMR will engage with the summer research programme; the other students will be offered the opportunity to do so as well, if they are eligible. The model will be close to the traditional one of training and supervision, with occasional events bringing all of the students together to develop the cohort.
6. Mentoring

Four years ago we redesigned the mentoring arrangements for Fellows. A significant component of the new arrangements is that we have developed a programme of training events focusing on generic skills. There is one event per month. Those that have taken place during the Review period are listed in Appendix M1. All Fellows are invited (i.e. not just those in Bristol). Feedback continues to be most encouraging. Dr Tim Burness leads on running this programme.

Each Fellow also has an individual mentor with subject-specific expertise. The Fellows’ reports indicate that most of these relationships are working well.

One of the goals four years ago was to encourage closer collaboration between the Fellows and other members of their host departments. The Fellows’ reports this year give reason to believe that good progress continues to be made in this respect, with several listing joint papers.
7. Structures

The Heilbronn Institute has, over a relatively short period of time, transformed itself from a research centre based almost entirely in Bristol (but drawing members from across the UK), to an institute with premises in Bristol, London, and Manchester, with staff employed by several universities, and funding mathematical activities across the whole country.

In order to provide advice and challenge to the external programme, we established three years ago an External Advisory Board. The following have been members: Professors Keith Ball FRS (Warwick), Nathanael Berestycki (Cambridge), Joe Chuang (City), Andrew Granville (UCL), Ben Green FRS (Oxford), Frances Kirwan FRS (Oxford), Daniela Kuhn (Birmingham), Jens Marklof FRS (Bristol), Colin Sparrow (Warwick), and John Toland FRS (Bath/INI).

The External Advisory Board meets annually, in September.

Last year Nathanael Berestycki, Joe Chuang, Andrew Granville, Daniela Kuhn, and Colin Sparrow stepped down, to enable us to refresh the membership. They were replaced by Michael Singer (UCL), Toby Stafford (Manchester), Michael Wemyss (Glasgow), and
Julia Wolf (Cambridge). We expect to continue the process of refreshing the membership this coming year.

The admin team supporting the external programme, based at the University of Bristol, makes an outstanding and important contribution to the Institute’s success. The team is led by Chrystal Cherniwchan and Eleanor Machin, who share the role of Heilbronn Manager. It also includes Fran Blake, who is responsible for events, Chloe Biddle, Jasmine Trueman and Abla Hatherell, PA to the Chair.

The Associate Chair, Tim Burness, makes an exceptionally important contribution to the relationship with the University of Bristol, which is HIMR’s principal academic partner, establishing a number of new initiatives that have proved extremely beneficial and bringing fresh thinking to several key aspects of the partnership.
Cracking the problem with 33. Booker, Andrew R. [arXiv:1903.04284].

Hodge numbers and deformations of Fano 3-folds. Brown, Gavin; Fatighenti, Enrico. [arXiv: 1707.00653].

Age evolution in the mean field forest fire model via multitype branching processes. Crane, Edward; Rath, Balazs; Yeo, Dominic. [arXiv: 1811.07981].


Constructing Fano 3-folds from cluster varieties of rank 2. Coughlan, Stephen; Ducat, Tom. [arXiv:1811.10926].

Hecke operators of Hilbert-Siegel theta series. Fretwell, Dan; Walling, Lynne. [arXiv: 1909.01852].


Higher congruences between newforms and Eisenstein series of squarefree level. Hsu, Cathy. [arXiv: 1706.05589].

$L^p \to L^q$ bounds for spherical maximal operators. Anderson, Theresa; Hughes, Kevin; Roos, Joris; Seeger, Andreas. [arXiv: 1909.05389].

Gapless topological phases and symmetry-enriched quantum criticality. Verresen, Ruben; Thorngren, Ryan; Jones, Nick G.; Pollmann, Frank. [arXiv: 1905.06969].


Topological data analysis of graph embeddings. **Rubin-Delanchy, Patrick**


Age evolution in the mean field forest fire model via multitype branching processes. **Crane, Edward; Rath, Balazs; Yeo, Dominic.** [arXiv: 1811.07981](https://arxiv.org/abs/1811.07981).


Mori flips, cluster algebras and diptych varieties without unprojection. **Ducat, Tom.**


Characterisation of the poles of the l-modular Asai L-factor. Kurinczuk, Rob; Matringe, Nadir. arXiv.1903.02427

RLE edit distance in near optimal time. Clifford, Raphael; Gawrychowski, Paweł; Kociumaka, Tomasz; Martin, Daniel P.; Uznański, Przemysław. [arXiv: 1905.01254].

Enumerating 3-generated axial algebras of Monster type. Khasraw, Sanhan; McInroy, Justin; Shpectorov, Sergey. [arXiv:1809.10657].

On the structure of axial algebras. Khasraw, Sanhan; McInroy, Justin; Shpectorov, Sergey. [arXiv:1809.10132]


Measuring the non-Gorenstein locus of Hibi rings and normal affine semigroup rings. Herzog, Jürgen; Mohammadi, Fatemeh; Page, Janet. [arXiv: 1903.05847].

Decomposition algebras and axial algebras. De Medts, Tom; Peacock, Simon; Shpectorov, Sergey; Van Couwenberghe, Michiel. [arXiv:1905.03481]

Hardness and Ease of Curing the Sign Problem for Two-Local Qubit Hamiltonians. Klassen, Joel; Marvian, Milad; Piddock, Stephen; Ioannou, Marios; Hen, Itay; Terhal, Barbara. [arXiv: 1906.08800]

Oracle complexity classes and local measurements on physical Hamiltonians. Gharibian, Sevag; Piddock, Stephen; Yirka, Justin. arXiv:1909.05981

A Quantum Search Decoder for Natural Language Processing. Bausch, Johannes; Subramanian, Sathyawageeswar; Piddock, Stephen. [arXiv:1909.05023]

Topological data analysis of graph embeddings. Rubin-Delanchy, Patrick.

Spectral clustering in the weighted stochastic block model. Gallagher, Ian; Bertiger, Anna; Priebe, Carey; Rubin-Delanchy, Patrick. [arXiv: 1910.05534].


A 2-compact group as a spets. Semeraro, Jason. [arXiv: 1906.00898].

Overconvergent Hilbert modular forms via perfectoid modular varieties. Birkbeck, Christopher; Heuer, Ben; Williams, Chris. [arXiv: 1902.03985].
Organised in cooperation with the School of Mathematics, University of Bristol

21st November 2018
**Bristol**
50 participants

**Heilbronn Colloquium**
Homological Stability: What is that for?
By | Nathalie Wahl (Copenhagen).

12 December 2018
**Bristol**
60 participants

**Heilbronn Colloquium**
From Phylogenetics to Algebraic Geometry
By | Marta Casanellas (Polytechnic University of Catalonia).

13 December 2018
**Bristol**
60 participants

**Heilbronn Colloquium**
Varieties of Signature Tensors
By | Bernd Sturmfels (UC Berkeley).
1-3 April 2019
**Bristol**
61 participants

**Distinguished Lecture Series 2019**
Semi-simplicity in Representation Theory
By | Geordie Williamson (Sydney).

15-17 May 2019
**Bristol**
52 participants

**Distinguished Lecture Series 2019**
Caps, Sets, Lines, Ranks, Polynomials, and (the absence of) Arithmetic Progressions
By | Jordan Ellenberg (UW, Madison).

5 September 2019
**Bristol**
30 participants

**Heilbronn Colloquium**
Quantum Chaos, Eigenvalue Statistics and the Fibonacci Sequence
By | Zeev Rudnick (Tel Aviv University).

12-13 September 2019
**Bristol**
80 participants

**Heilbronn Annual Conference**
**Speakers** | Melody Chan (Brown), Hugo Duminil-Copin (IHES), Emmanuel Kowalski (ETZ Zürich), Holly Krieger (Cambridge), Kannan Soundararajan (Stanford), Leslie Valiant (Harvard), Bianca Viray (University of Washington), Julia Wolf (Cambridge).
APPENDIX | E2

Sponsored Events

The Heilbronn Institute supports mathematics in the UK through a programme of conferences, meetings and workshops.

8-9 November 2018
Sheffield
63 participants

**Young Researchers in Algebraic Number Theory (Y-RANT)**

**Organisers** | Ciaran Schembri (Sheffield) and Ariel Weiss (Sheffield)

**Invited Speakers** | Ana Caraiani (Imperial College), Minhyong Kim (Oxford)

**Speakers** | Nirvana Coppola (Bristol), Alexandre Daoud (KCL), Fabio Ferri (Exeter), Dan Fretwell (Bristol), Pip Goodman (Bristol), Daniel Gulotta (Oxford), Damián Gvirtz (Imperial), Richard Hatton (Nottingham), Ben Heuer (KCL/LSGNT), Pol van Hoften (LSGNT/KCL), Catherine Hsu (Bristol), Ashwin Iyengar (KCL), Gene Kopp (Bristol), Jef Laga (Cambridge), Marius Leonhardt (Cambridge), Rob Little (Durham), Martin Lüdtke (Frankfurt), André Macedo (Reading), Salvatore Mercuri (Durham), Adam Morgan (Glasgow), Masahiro Nakahara (Manchester), Alice Pozzi (UCL), Angelo Rendina (Sheffield), Beth Romano (Cambridge), Alex Saad (Oxford), Vlad Serban (Vienna), Daria Shchedrina (Nottingham), George Turcas (Warwick), Sadiah Zahoor (Sheffield), Di Zhang (Sheffield).
11-14 December 2018
Bristol
46 participants

Advances in Applied Algebraic Geometry
Organiser | Fatemeh Mohammadi (Bristol).
Speakers | Spencer Backman (Frankfurt), Marta Casanellas (Barcelona), Carlos D’Andrea (Barcelona), Emanuele Delucchi (Freiburg), Robin Evans (Oxford), Kaie Kubjas (MIT), Anna Levina (Tübingen), Marta Panizzut (TU Berlin), Johannes Rauh (MPI Leipzig), Cordian Riener (Tromsø), Felipe Rincón (Queen Mary), Kayvan Sadeghi (Cambridge), Eduardo Sáenz de Cabezón (Logroño), Anna Seigal (Berkeley), Bernd Sturmfels (MPI Leipzig), Timo de Wolff (TU Berlin), Henry Wynn (LSE), Piotr Zwiernik (Barcelona).

8-11 April 2019
Lancaster
129 participants

British Mathematical Colloquium (BMC 2019)
Organisers in Lancaster University | Jan Grabowski, Tony Nixon, Nadia Mazza, David Pauksztello, Yemon Choi, Derek Kitson, Natasha Blitvic, Martin Lindsay, Dirk Zeindler, James Groves and David Towers.

Plenary Speakers | Michel Broué (Université Paris Diderot), Alice Guionnet (École normale supérieure de Lyon), Kathryn Hess (EPFL, Lausanne), Gil Kalai (Hebrew University of Jerusalem), Nicolas Monad (EPFL, Lausanne), Janos Pach (EPFL, Lausanne and Renyi Institute, Hungary) and Charlie Stripp (MEI).

8-10 April 2019
Bristol
160 participants

Quantum Computing Theory in Practice
Organisers | Steve Brierley (River Lane Research), Noah Linden (Bristol), Ashley Montanaro (Bristol).
Keynote Speakers | Iordanis Kerenidis (CNRS, IRIF, Paris Diderot), Hartmut Neven (Google).
Invited Speakers | Ryan Babbush (Google), Andrew Childs (University of Maryland), Eleni Diamanti (CNRS, Pierre et Marie Curie), Aram Harrow (MIT), Naomi Nickerson (PsiQuantum), David Poulin (Université de Sherbrooke), Marcus da Silva (Rigetti), Kristan Temme (IBM), Ronald de Wolf (CWI).

15-17 April 2019
Durham
83 participants

35th British Colloquium for Theoretical Computer Science (BCTCS)
Organisers | Matthew Johnson (Durham), Barnaby Martin (Durham), George Mertzios (Durham), Daniel Paulusma (Durham).
Speakers | Andy Adamatzky (UWE), Ulrich Berger (Swansea), Maria Chudnovsky (Princeton), Richard Joza (Cambridge), Vivien Kendon (Durham), Kitty Meeks (Glasgow), Bahar Rastegari (Southampton), Berhard Von Stengel (LSE), Susan Stepney (York), James Worrell (Oxford).
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<tr>
<td>7-8 May 2019</td>
<td>The 26th meeting of the London – Paris Number Theory</td>
<td>KCL</td>
<td>40</td>
<td>Organisers</td>
<td>Yiannis Petridis (UCL), David Burns (KCL), Kevin Buzzard (Imperial College), Fred Diamond (KCL), Alexei Skorobogatov (Imperial College), Andrei Yafaev (UCL), Sarah Zerbes (UCL).</td>
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<td></td>
<td>The Theme is p-adic Cohomology and Integration</td>
<td></td>
<td></td>
<td>Speakers</td>
<td>Jennifer Balakrishnan (Boston), Netan Dogra (Oxford), Veronika Ertl (Regensburg), Wieslawa Niziol (École Normale Supérieure de Lyon), Joahannes Anschütz (Bonn), Andreas Langer (Exeter).</td>
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<tr>
<td>1st June 2019</td>
<td>Gauge Theory Summer School - British Isles Graduate Workshop</td>
<td>UCL</td>
<td>29</td>
<td>Organisers</td>
<td>Benjamin Aslan (UCL), Christopher Evans (UCL), Daniel Platt (Imperial College), Angela Wu (UCL).</td>
</tr>
<tr>
<td>17-20 June 2019</td>
<td>Applications of the Model Theory of Fields with Operators</td>
<td>Manchester</td>
<td>42</td>
<td>Organiser</td>
<td>Omar Leon Sanchez (Manchester)</td>
</tr>
<tr>
<td></td>
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<td></td>
<td></td>
<td>Speakers</td>
<td>Alex Wilkie (Manchester/Oxford), Jonathan Kirby (East Anglia), Angus Macintyre (QMUL), Jonathan Pila (Oxford), Michael Wibmer (Notre Dame), Gleb Pogudin (NYU, CIMS), Ivan Tomasic (QMUL), Tamara Servi (Paris Diderot), Patrick Speissegger (McMaster), Jean-Philippe Rolin (Bourgogne), Sebastian Eterovic (Oxford), Rachael King (QMUL), Paola D’Aquino (Università degli Studi della Campania).</td>
</tr>
<tr>
<td>17-28 June 2019</td>
<td>CMI-HIMR Summer School</td>
<td>Computational Number Theory</td>
<td>Bristol</td>
<td>80</td>
<td>Organisers</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Speakers</td>
<td>John Cremona (Warwick), Céline Maistret (Bristol), Adam Morgan (KCL), Jan Steffen Müller (Oldenburg), Rachel Newton (Reading), Samir Siksek (Warwick), Andrew Sutherland (MIT), John Voight (Dartmouth College).</td>
</tr>
<tr>
<td>10-13 June 2019</td>
<td>Harmonic Analysis on and Beyond Homogeneous Setting</td>
<td>Birmingham</td>
<td>35</td>
<td>Organisers</td>
<td>Maria Carmen Reguera (Birmingham)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Speakers</td>
<td>Xavier Tolsa (Autonoma de Barcelona), Micheal Lacey (Geirgua Tech); Andrei Lerner (Bar-Ilan), Carlos Pérez (BCAM); Stefanie Petermich (Toulouse), L. Prat, (Autonoma de Barcelona), X. Tolsa, (Autonoma de Barcelona), A. Volberg (Michigan), B. Wick (Washington), J. Azzam, (Edinburgh), F. Di Plinio (Virginia), D. Frey (Delft) T. Luque (Complutense Madrid),</td>
</tr>
</tbody>
</table>
K. Perfekt (Reading), L. Roncal (BCAM) J. Bailey (Australian National), D. Beltran (BCAM), J. Conde, (Brown), Marina Iliopoulou (UCLA) Kangwei Li (BCAM), Dario Mena (Costa Rica), E. Rhyde (Leeds); G. Brocchi (Birmingham). F. Bernicot (Nantes), Tuomas Hytönen (Helsinki); Ben Jaye (Clemson); J.A. Pelaez (Malaga); A. Pushnitski (KCL), A. Aleman (Lund); C. Benea (Nantes), S. Pott (Lund).

17-20 June 2019
Manchester
29 participants

Applications of the Model Theory of Fields with Operators
Organisers | Omar León Sánchez, Marcus Tressl and Gareth Jones (Manchester)
Speakers | Alex Wilkie (Manchester/Oxford), Jonathan Kirby (East Anglia), Angus Macintyre (QMUL), Jonathan Pila (Oxford), Michael Wibmer (Notre Dame), Gleb Pogudin (NYU, CIMS), Ivan Tomasic (QMUL), Tamara Servi (Paris Diderot), Patrick Speissegger (McMaster), Jean-Philippe Rolin (Bourgogne), Sebastian Eterovic (Oxford), Rachael King (QMUL), Paola D’Aquino (Università degli Studi della Campania).

18-21 June 2019
Exeter
63 participants

42nd Research Students’ Conference in Probability and Statistics (RSC)
Organiser | Victoria Volodina (Exeter).
Keynote Speakers | Deborah Ashby (Imperial College London), John Paul Gosling (Leeds), Theo Economou (Exeter), Tim Paulden (ATASS).
8-12 July 2019  
**Warwick**  
70 participants

**Measurability, Ergodic Theory and Combinatorics**

**Organisers** | Miklós Abért (MTA Alfréd Rényi Institute of Mathematics), Tim Austin (UCLA), András Máthé (Warwick) and Oleg Pikhurko (Warwick).

**Speakers** | Ágnes Backhausz (Eötvös Loránd), Vitaly Bergelson (Ohio), Lewis Bowen (Texas at Austin), Clinton Conley (Carnegie Mellon), Endre Csóka (Alfréd Rényi Institute), Gábor Elek (Lancaster), Damien Gaboriau (ENS Lyon), Lukasz Grabowski (Lancaster), Ben Green (Oxford), Kate Juschenko (Northwestern), Gábor Kun (Alfréd Rényi Institute), Hanfeng Li (SUNY at Buffalo), Andrew Marks (UCLA), Joel Moreira (Northwestern), Nikolay Nikolov (Oxford), Tom Sanders (Oxford), Brandon Seward (Courant Institute), Andreas Thom (TU Dresden), Anush Tserunyan (Illinois at Urbana-Champaign), Robin Tucker-Drob (Texas A&M), Tamar Ziegler (Hebrew).

15-19 July 2019  
**Sheffield**  
36 participants

**p-adic modular forms and Galois representations conference**

**Organisers** | Tobias Berger (Sheffield)

**Speakers** | Denis Benois (Université Bordeaux), Thanasis Bouganis (Durham University), George Boxer (University of Chicago), Lassina Dembélé (Dartmouth College), Mladen Dimitrov (Université Lille), Carl Wang-Erickson (Imperial College),
Toby Gee (Imperial College London), Shin Hattori (Tokyo City University), Valentin Hernandez (Université Paris-Sud, Orsay), Haruzo Hida (University of California, Los Angeles), Krzysztof Klosin (Queens College CUNY), Emmanuel Lecouturier (Tsinghua University), Zheng Liu (McGill, Montreal), James Newton (King’s College London), Vincent Pilloni (ENS Lyon), Alice Pozzi (UCL), Jack Thorne (University of Cambridge), Jacques Tilouine (Paris 13), Chris Williams (Imperial College London).

22-26 July 2019
Birmingham
68 participants

21st Postgraduate Group Theory Conference (PGTC)
Organisers at Birmingham | Mark Butler, Ollie Jones, Andrea Pachera, Jack Saunders and Martin van Beek.
Plenary Speakers | Martin Liebeck (Imperial College), Colva Roney-Dougal (St. Andrews).

6-7 September 2019
Lancaster
50 participants

LMS Prospects in Mathematics Meeting 2019
Organiser | Nadia Mazza (Lancaster)
Speakers | Daniel Colquitt (Liverpool), Codina Cotar (UCL), Daniel Lodhin (Birmingham), Lucy Morgan (Lancaster), Helen Ogden (York), Louis Theran (St. Andrews), Anitha Thillaisundaram (Lincoln), Brian Tom (Cambridge), Lynne Walling (Bristol), Jared White (Universite de Franche-Conte, Besancon), Riam Kanso (UCL), J Tawn (Lancaster), Zoltan Kocsis (Manchester), Benjamin Miller (Warwick), Jon Pitchford (York), Gesine Reinert (Oxford).

23-28 September 2019
Oxford
118 participants

Geometry and Analysis: Celebrating the Mathematics of Pierre Pansu
Organisers | Emmanuel Breuillard (Cambridge), Martin Bridson (Oxford), Cornelia Drutu (Oxford), Enrico Le Donne (Jyväskylä).
 Speakers | Andrei Agrachev (SISSA, Trieste), Zoltán Balogh (Bern), Florent Baudier (Texas A&M University), Itai Benjamini (Weizmann), Olivier Biquard (Ecole Normale Supérieure de Paris), Anna Erschler (Ecole Normale Supérieure de Paris), Sébastien Gouëzel (CNRS, Nantes), Peter Haïssinsky (Université d’Aix-Marseille), Ursula Hamenstädt (Bonn), Misha Kapovich (UC Davis), Anders Karlsson (Geneva), Bruce Kleiner (NYU, Courant), James Lee (Washington), Assaf Naor (Princeton), Richard Schwartz (Brown), Stefan Wenger (Université de Fribourg), Robert Young (NYU, Courant).
Focused Research Workshops

Heilbronn Focused Research Workshops, formed with the aim of facilitating research groups to work on adventurous and challenging mathematical problems

22-26 October 2018
Bristol
6 participants

**Height Functions and Lehmer-Type Problems**

**Organiser** | Kirsti Biggs (Bristol).

**Participants** | Kevser Aktas, Shabnam Akhtari, Alia Hamieh, Kate Petersen and Lola Thompson.

26-27 November 2018
Paris
44 participants

**The 25th meeting of the London Paris Number Theory**

**Organisers** | Yiannis Petridis (UCL), Vlad Dokchitser (KCL), Kevin Buzzard (Imperial College), Fred Diamond (KCL), Alexei Skorobogatov (Imperial College), Andrei Yafaev (UCL), Sarah Zerbes (UCL).

5-8 December 2018
Heriot-Watt University
4 participants

**Kinetic PDEs with Multiple Equilibria: Beyond Ergodic Theory**

**Participants** | Michela Ottobre (Maxwell Institute, Edinburgh) and Boguslaw Zegarlinski (Imperial College), Paul Dobson and Wang Yifu, Paolo Butta (La Sapienza, Rome) and Prof. Franco Flandoli (Scuola Normale Superiore, Pisa).
Structure and Randomness in Hypergraphs

Organisers | Peter Allen, Julia Böttcher and Jozef Skokan (LSE)
Speakers | Jan Hladky (Institute of Mathematics of the Czech Academy of Sciences), Allan Lo (Birmingham), Mihyun Kang (Graz University of Technology, Institute of Discrete Mathematics, Austria), Oleg Pikhurko (Warwick), Asaf Shapira (Tel-Aviv University), Maya Stein (Center for Mathematical Modelling, Santiago, Chile), Liana Yepremyan (Oxford)

Algebraic Geometry in Combinatorics

Organiser | Hamid Ahmadinezhad (Loughborough).
Participants | Frank de Zeeuw (CUNY), Brendan Murphy (Bristol), Piotr Pokara (Warsaw), Misha Rudnev (Bristol), Adam Sheffer (CUNY), Sophie Stevens (Bristol), Konrad Swanepoel (LSE), Enrioco Fatighenti (Loughborough).
25-27 March 2019
Bristol
20 participants

Connections between Network Modelling, High-dimensional Statistics and Topological Data Analysis

Organiser | Patrick Rubin-Delanchy (Bristol)
Participants | Haeran Cho (Bristol), Nick Heard (Imperial College), Kathryn Leeming (Warwick), Carey Priebe (Johns Hopkins University), Gesine Reinert (Oxford), Patrick Rubin-Delanchy (Bristol), Francesco Sanna Passino (Imperial College), Vinesh Solanki (Bristol), Yi Yu (Bristol), Sofia Olhede (UCL), John Conroy, Mark Briers (ATI), Carsten Maple (Warwick), Ben Sach (ATI), Joshua Cape (University of Michigan).

7-8 May 2019
KCL, London
40 participants

The 26th Meeting of the London – Paris Number Theory
The Theme is p-adic Cohomology and Integration

Organisers | Yiannis Petridis (UCL), David Burns (KCL), Kevin Buzzard (Imperial College), Fred Diamond (KCL), Alexei Skorobogatov (Imperial College), Andrei Yafaev (UCL), Sarah Zerbes (UCL).
Speakers | Jennifer Balakrishnan (Boston), Netan Dogra (Oxford), Veronika Ertl (Regensburg), Wieslawa Niziol (École Normale Supérieure de Lyon), Joahnnes Anschütz (Bonn), Andreas Langer (Exeter).

20-24 May 2019
Bristol
4 participants

Zauner’s Conjecture

Organiser | Gene Kopp (Bristol)
Participants | Steven Flammia (Sydney), Huyla Arguz (Imperial College), Marcus Appleby (Sydney), Gene Kopp (Bristol)
<table>
<thead>
<tr>
<th>Event Title</th>
<th>Location</th>
<th>Date</th>
<th>Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Efficient Congruencing and Decoupling</td>
<td>Bristol</td>
<td>17-21 June 2019</td>
<td>Kevin Hughes (Bristol), Trevor Wooley (Bristol), Julia Brandes (Gothenburg), Shaoming Guo (Wisconsin), Ruixiang Zhang (Wisconsin), Zane Li (UCLA), Raphael Steiner (IAS), Brandon Hanson (UGA), Brian Cook (KSU), Scott Parsell (West Chester), Robert Vaughan (PSU), George Shakan (Oxford), Marco Vitturi (Nantes), Kirsti Biggs (Bristol), Kostantinos Poulias (Bristol), Akshat Mudgal (Bristol), Javier Pliego Garcia (Bristol).</td>
</tr>
<tr>
<td>P-adic Coefficients and Geometry</td>
<td>Imperial College</td>
<td>26-28 June 2019</td>
<td>Raju Krishnamoorthy (Athens), Ambrus Pál (Imperial College London), Tamás Csige (Münster), Valentina di Proietto (Exeter), Oli Gregory (München), Kiran Kedlaya (San Diego), Joe Kramer-Miller (Irvine), Raju Krishnamoorthy (Athens), Alyosha Latyntsev (Oxford), Ambrus Pál (Imperial College London), Kang Zuo (Mainz).</td>
</tr>
</tbody>
</table>
29 July – 2 August 2019  
**Birmingham**  
235 participants  
**27th British Combinatorial Conference (2019)**  
**Organiser** | Richard Mycroft (Birmingham), Allan Lo, Guillem Perarnau and Andrew Treglown (Birmingham)  
**Plenary Speakers** | Michael Krivelevich (Tel Aviv), Penny Haxell (Waterloo), Dan Král’ (Masaryk and Warwick), Kristin Lauter (Microsoft Research), Hendrik van Maldeghem (Ghent), Iain Moffatt (Royal Holloway), Igor Pak (UCLA), Daniel Paulusma (Durham), Gábor Tardos (Rényi Institute).

12-16 August 2019  
**Greenwich**  
10 participants  
**Springer Fibres and Geometric Representation Theory**  
**Organisers** | Neil Saunders and Lewis Topley (Greenwich)  
**Participants** | Sam Gunningham (Edinburgh), Katerina Hristova (UEA), Carl Mautner (UC Riverside), Kevin McGerty (Oxford), Kayvan Nejabati Zenouz (Greenwich), Travis Schedler (Imperial College), David Stewart (Newcastle), Catharina Stroppel (Bonn), Ting Xue (Melbourne)

8-11 August 2019  
**Bristol**  
16 participants  
**Noncommutative Mathematics and Quantum Information**  
**Organiser** | Dominic Verdon (Bristol)  
**Participants** | Amaury Freslon (Paris-Sud), Andre Kornell (Tulane), Laura Mancinska (Copenhagen), David Reutter (Oxford), David Roberson (Copenhagen), Simon Schmidt (Saarbruecken), Piotr Soltan (Warsaw), Dan Stahlke (Intel), Sergii Strelchuk (Cambridge), Ivan Todorov (Belfast), Dominic Verdon (Bristol), Andreas Winter (UAB, Barcelona)

2-6 September 2019  
**Bristol**  
16 participants  
**Toric Arrangement Complements, Compactifications, Cohomologies and Matroids**  
**Organisers** | Farhad Babaee and Kevin Grace (Bristol)  
**Participants** | Karim Adiprasito, (Hebrew University), Omid Amini, (École Polytechnique), Farhad Babaee (Bristol), Ollie Clarke (Bristol), Emanuele Delucchi (Fribourg), Alex Fink (Queen Mary University of London), Giovanni Gaiffi (Pisa), Jeffrey Giansiracusa (Swansea), Kevin Grace (Bristol), Fatemeh Mohammadi (Bristol), Roberto Pagaria (Scuola Normale Superiore), Yue Ren (MPI MIS Leipzig)

9-11 September 2019  
**Bristol**  
12 participants  
**Modern Challenges in Spectral Analysis of Time Series**  
**Organisers in Bristol** | Yi Yu, Guy Nason, Tobias Kley  
**Participants** | Xiaofeng Shao (Illinois), Marc Hallin (Brussels), Andreas Anastasiou (Cyprus), Rainer von Sachs (UCLouvain), Anne van Delft (Ruhr University Bochum), Marina Knight (York), Jens-Peter Kreiß (TU Braunschweig), Daniel Rademacher (TU Braunschweig), Matthew Nunes (Bath), Sandipan Roy (Bath).
### Future Events

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
<th>Location</th>
<th>Organisers</th>
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<tbody>
<tr>
<td>14-15 October 2019</td>
<td>The 27th London – Paris Number Theory Meeting</td>
<td>Paris</td>
<td>Olivier Fouquet (Paris Sud) Michael Harris, Marc Hindry (Diderot Paris VII), Matthew Morrow (CNRS), Jacques Tilouine (Paris 13)</td>
</tr>
<tr>
<td>31st October 2019</td>
<td>Spiking and collapsing in large noise limits of SDE's</td>
<td>Bristol</td>
<td>Joseph Najundel (Bristol)</td>
</tr>
<tr>
<td>6-8 November 2019</td>
<td>Young Researchers in Algebraic Number Theory (Y-RANT)</td>
<td>Warwick</td>
<td>Alessandro Arlandini (Warwick) and Mattia Sanna (Warwick)</td>
</tr>
<tr>
<td>16 December 2019</td>
<td>Duffin-Schaeffer Conjecture</td>
<td>Bristol</td>
<td>Demi Allen (Bristol)</td>
</tr>
<tr>
<td>6 January 2020 – 30 June 2020</td>
<td>K-Theory, Algebraic Cycles and Motivic Homotopy Theory</td>
<td>INI Cambridge</td>
<td>Rob de Jeu (VU Amsterdam), Aravind Asok (USC), Charles Doran (Alberta), Roy Joshua (Ohio State), Marc Levine (Duisburg-Essen), James D. Lewis (Alberta), Ursula Whitcher (Michigan and AMS)</td>
</tr>
</tbody>
</table>
6 January 2020 – 30 June 2020
INI Cambridge

Groups, representations and applications: New perspectives (GRA)
Organisers | Colva Mary Roney-Dougal (St Andrews), Martin Liebeck (Imperial College London), Kay Magaard (University of Arizona), Britta Späth (Bergische Universität Wuppertal), Pham Tiep (Rutgers, The State University of New Jersey).

10 January 2020 – 9 February 2020
Lancaster

Discrete Structure: Algebra, Combinatorics and Geometry
Organiser | Anthony Nixon (Lancaster)

13 March 2020
Bristol

Heilbronn Colloquium
By | Gunnar Carlsson (Stanford University)

20 March 2020
Bristol

Heilbronn Colloquium
By | Burt Totaro (University of California, Los Angeles)

27 March 2020
Bristol

Heilbronn Colloquium
By | Gunter Malle (Universität Kaiserslautern, Germany)

30 March 2020 – 1st April 2020
Imperial College

New Perspectives on SYZ Mirror Symmetry
Organiser | Mirko Mauri (Imperial College)

6-9 April 2020
Glasgow

Joint BMC-BAMC Meeting
Organiser | Alex Bartel (Glasgow)
20-24 April 2020  
**LSE**  
**LMS Summer School | Packing Graphs and Hypergraphs**  
**Organisers |** Peter Allen, Julia Böttcher and Jozef Skokan (LSE)

11 May 2020  
**Imperial College**  
**LMS Summer School | Methods for Random Matrix Theory and Applications**  
**Organisers |** Igor Krasovsky and Jani Virtanen (Imperial College)

June 2020  
**Imperial College**  
**Tropical Geometry, Berkovich Spaces, Arithmetic D-modules and p-adic local systems.**  
**Organisers |** Ambrus Pal (Imperial College of London), Jeffrey Giansiracusa (Swansea Univ.), Konstantin Ardakov (Oxford) and Jérôme Poineau (Caen Univ. France)

8-10 June 2020  
**Bristol**  
**Young Researchers in Mathematics (TRM) 2020**  
**Organiser |** Charley Cummings (Bristol)  
Open to all PhD students in the UK.
<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
<th>Location</th>
<th>Organisers</th>
<th>Details</th>
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</thead>
<tbody>
<tr>
<td>6-10 July 2020</td>
<td>Building Bridges</td>
<td>5th EU/US Summer School on Automorphic Forms and Related Topics (BB5)</td>
<td>Sarajevo</td>
<td>Samuele Anni (Université d'Aix-Marseille), Jim Brown (Occidental College), Jay Jorgenson (City College of New York), Almasa Odzak (University of Sarajevo), Lejla Smajlović (University of Sarajevo), Lynne Walling (University of Bristol).</td>
</tr>
<tr>
<td>6-10 July 2020</td>
<td>GAeL (Géométrie Algébrique en Liberté)</td>
<td>Loughborough</td>
<td>Luis José Santana Sánchez, Tiago Duarte Guerreiro (Loughborough)</td>
<td></td>
</tr>
<tr>
<td>19-25 July 2020</td>
<td>Young Researchers in Combinatorics workshop at ICMS in Edinburgh</td>
<td>Edinburgh</td>
<td>Shagnik Das (FU Berlin), Carla Groenland (University of Oxford), Jonathan Noel (University of Warwick), Yanitsa Pehova (University of Warwick).</td>
<td></td>
</tr>
<tr>
<td>20 July 2020</td>
<td>LMS Summer School</td>
<td>Point Configurations: Deformations and Rigidity</td>
<td>UCL</td>
<td>Codina Cotar (UCL)</td>
</tr>
<tr>
<td>27 July – 7 August 2020</td>
<td>CMI-HIMR Integrable Probability Summer School</td>
<td>Oxford</td>
<td>Alexei Borodin (MIT) and Ivan Corwin (Columbia)</td>
<td>Hugo Duminil-Copin (IHÉS), Vadim Gorin (MIT) TBC, Rick Kenyon (Brown University), Greta Panova (University of Southern California), Fabio Toninelli (University Lyon 1), Michael Wheeler (University of Melbourne).</td>
</tr>
<tr>
<td>Year</td>
<td>City</td>
<td>Event Title</td>
<td>Organisers</td>
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<tr>
<td>2020</td>
<td>Cambridge</td>
<td>CMI/HIMR/INI/LMS Meeting dedicated to the Memory of Michael Atiyah: The Unity of Mathematics</td>
<td>CMI/HIMR/INI/LMS.</td>
<td></td>
</tr>
<tr>
<td>2020</td>
<td>Cambridge</td>
<td>Relativistic Quantum Summoning Tasks: Theory and Applications</td>
<td>Adrian Kent (Cambridge)</td>
<td></td>
</tr>
<tr>
<td>2020</td>
<td>Bristol</td>
<td>Topology of random matrix fields and chaotic systems</td>
<td>Jonathan Robbins (Bristol)</td>
<td></td>
</tr>
<tr>
<td>2020</td>
<td>Leicester</td>
<td>Local-Global Conjectures, Finite Loop Spaces, Classifying Stacks and I-Adic Cohomology</td>
<td>Jason Semeraro and Frank Neumann (Leicester)</td>
<td></td>
</tr>
<tr>
<td>Fellows Joining in 2018–2019</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-------------------------------</td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>
| **Allen**, Demi | Ph.D., University of York, UK  
*Research Interest* | Pure Mathematics. |
| 1<sup>st</sup> January 2019 |
| **Barrett**, Benjamin | Ph.D., Cambridge, UK  
*Research Interest* | Geometric group theory. |
| 1<sup>st</sup> October 2018 |
| **Beckwith**, Olivia | Ph.D., Emory University, Atlanta, USA  
*Research Interest* | Analytic number theory. |
| 1<sup>st</sup> October 2018 |
| **Doris**, Christopher | Ph.D., University of Bristol, UK  
| 1<sup>st</sup> December 2018 |
| **Dougall**, Rhiannon | Ph.D., Warwick, UK  
*Research Interest* | Dynamics and ergodic theory. |
| 1<sup>st</sup> October 2018 |
| **Hsu**, Catherine | Ph.D., University of Oregon, USA  
*Research Interest* | Algebraic number theory. |
| 1<sup>st</sup> October 2018 |
| **Page**, Janet | Ph.D., University of Illinois, Chicago, USA  
*Research Interest* | Commutative algebra and algebraic geometry. |
| 1<sup>st</sup> October 2018 |
### APPENDIX | P2  Fellows Leaving since September 2018

<table>
<thead>
<tr>
<th>Name</th>
<th>Location</th>
<th>End date</th>
<th>Current Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beckwith, Olivia</td>
<td>Bristol</td>
<td>August 2019</td>
<td>Assistant Professor, University of Illinois at Urbana-Champaign, USA</td>
</tr>
<tr>
<td>Martin, Daniel</td>
<td>Bristol</td>
<td>June 2019</td>
<td>Data Scientist, The Alan Turing Institute, London, UK</td>
</tr>
<tr>
<td>Page, Janet</td>
<td>Bristol</td>
<td>August 2019</td>
<td>Postdoctoral position, University of Michigan, USA</td>
</tr>
<tr>
<td>Palmer, Matthew</td>
<td>Bristol</td>
<td>August 2019</td>
<td>Postdoctoral position, Department of Mathematics, Uppsala University, Sweden</td>
</tr>
<tr>
<td>Thomas, Adam</td>
<td>Bristol</td>
<td>Autumn 2018</td>
<td>Assistant Professor, Warwick University, UK</td>
</tr>
</tbody>
</table>
### APPENDIX | P3

<table>
<thead>
<tr>
<th>Name</th>
<th>Institution</th>
<th>Extension Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fretwell, Dan</td>
<td>Bristol</td>
<td>3 year extension (Bristol)</td>
</tr>
<tr>
<td>Gillespie, Neil</td>
<td>Bristol</td>
<td>1 year extension (Bristol)</td>
</tr>
<tr>
<td>Hughes, Kevin</td>
<td>Bristol</td>
<td>1 Year extension (Bristol)</td>
</tr>
<tr>
<td>Lamplugh, Jack</td>
<td>London</td>
<td>1 year extension (London)</td>
</tr>
<tr>
<td>McInroy, Justin</td>
<td>Bristol</td>
<td>1 year extension (Bristol)</td>
</tr>
<tr>
<td>Oliver, Thomas</td>
<td>Oxford</td>
<td>1 year extension (Oxford)</td>
</tr>
</tbody>
</table>
### APPENDIX | P4 Future Fellows – October 2019

<table>
<thead>
<tr>
<th>Name</th>
<th>Degree</th>
<th>Research Interest</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Biggs, Kirsti</strong></td>
<td>PhD (Bristol)</td>
<td>Research Interest</td>
</tr>
<tr>
<td><strong>Skerman, Fiona</strong></td>
<td>PhD (Oxford)</td>
<td>Research Interest</td>
</tr>
<tr>
<td><strong>Lees, Benjamin</strong></td>
<td>PhD (Warwick)</td>
<td>Research Interest</td>
</tr>
<tr>
<td><strong>Williams, James</strong></td>
<td>PhD (Bath)</td>
<td>Research Interest</td>
</tr>
<tr>
<td><strong>Harper, Scott</strong></td>
<td>PhD (Bristol)</td>
<td>Research Interest</td>
</tr>
</tbody>
</table>
Tickle, Sam
Bristol
PhD (Lancaster)
**Research Interest** | Statistics – Data Science.
**Starting date** | 1st December 2019

Wilkins, Nicholas
Bristol
PhD (Oxford)
**Research Interest** | Symplectic topology, Floer theory, quantum cohomology, Gromov-Witten invariants, string topology.

Jackson, Joshua
Imperial College
PhD (Oxford)
**Research Interest** | Algebraic geometry.

Birkbeck, Chris
UCL
PhD (Warwick)
**Research Interest** | Number Theory, particularly interested in p-adic automorphic forms and study slopes of Hilbert modular forms.

Spicer, Calum
KCL
PhD (California, San Diego)
**Research Interest** | Foliations in algebraic geometry.

Calvert, Kieran
Manchester
PhD (Oxford)
**Research Interest** | Representation theory; Coxeter and Weyl groups, graded Hecke algebras and Dirac operators in representation theory.

Sutton, Louise
Manchester
PhD (QMUL)

Smith, Benjamin
Manchester
PhD (QMUL)
**Research Interest** | Tropical geometry, polyhedral geometry, combinatorial commutative and algebra and combinatorics.
## Career Development

Led by | **Tim Burness**, Associate Chair  
Heilbronn Institute for Mathematical Research

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