CANDIDATE BRIEF

Research Fellow in Pure Mathematics,
Faculty of Engineering and Physical Sciences

Salary: Grade 7 (£39,105 – £46,485 p.a.)

Reference: EPSMA1121

Closing date: Friday 07 March 2025

Fixed-term for 26 months, to end by 31 July 2027

We are open to discussing flexible working arrangements

Research Fellow in Pure Mathematics, School of Mathematics.

Are you an early career researcher looking for your first challenge? Do you want to further your career in one of the UK's leading research-intensive universities?

We are looking for one Postdoctoral Research Fellow to work on the [EPSRC Programme Grant](#): "[Combinatorial Representation Theory: Discovering the Interfaces of Algebra with Geometry and Topology](#)".

You will join a strong and highly supportive collaborative team consisting of [Professor Karin Baur](#), principal investigator, together with co-investigators [Professor Eleonore Faber](#), [Dr Joao Faria Martins](#), [Professor Bethany Marsh](#) and [Professor Paul Martin](#).

The vision of the Programme Grant is to develop a broad and holistic theory of representation theory, engaging and unifying diverse perspectives, from algebra, geometry and topology to physics, life sciences and engineering, enabling a cross-discipline transfer of ideas. Our aim is thus to develop a unifying representation theory, which acts as a conduit for cross-fertilization between these disciplines.

The Programme grant is organised around the Work packages, WP1 – WP5, below:

WP1: Understand algebraic properties of surfaces;
WP2: Classifying algebraic friezes;
WP3: Characterising Lie-theoretic combinatorics via cluster algebras;
WP4: Explain key relationships between algebraic representation theory and geometry;
**WP5:** Developing applications of combinatorial representation theory to topology and physics.

A transverse level of structure in our programme grant is that of four different themes, T1 – T4 below, where points of view and tools common to different WP's are synergistically put together.

T1. Algebras bridging between combinatorics and geometry;
T2. Mutation of algebraic and geometric structures;
T3. Algebraic geometry of Grassmannians and moduli spaces;
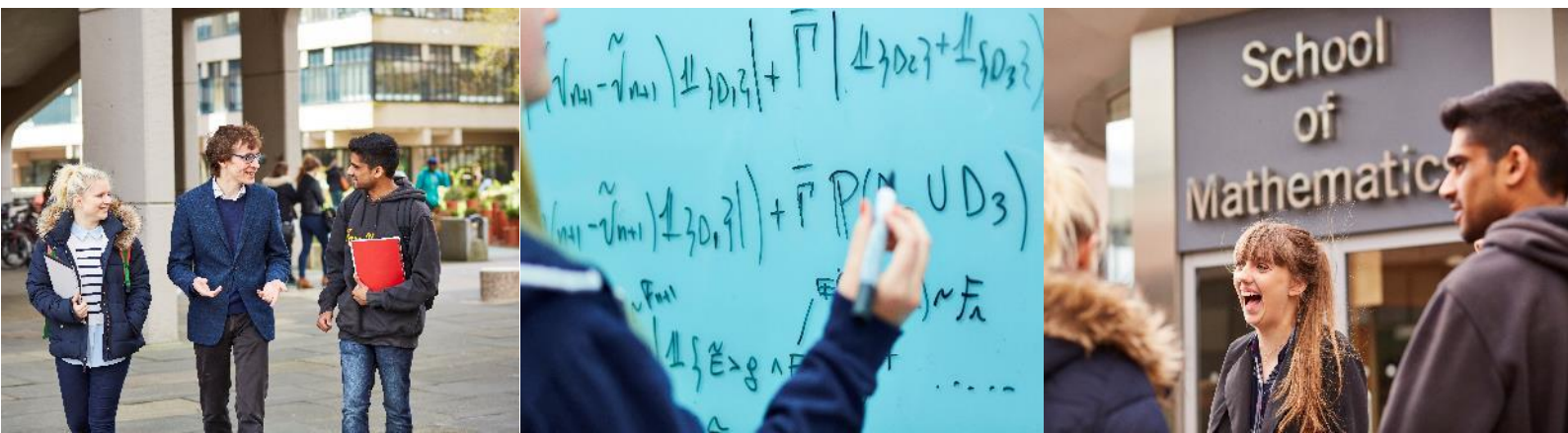
T4. Computations for Physics.

The scope of the Work packages and Themes is detailed in our [Research Webpage.](#)

An ability to work on WP5 and / or Theme 4 is preferred for this call.

In particular, preference may be given to candidates with expertise in one or more of the following areas: geometric topology, (extended) topological quantum field theories, topological quantum computing, mathematical models for topological phases, and statistical mechanics.

An ability to work across different work packages, and moreover facility in establishing connections between different themes is a strong plus.

The Programme grant is flexible and applications from candidates with the potential to work on any of the themes or work packages will be considered.

The Programme Grant team is committed to Equality, Diversity and Inclusion, and to an environment free of any type of discrimination, and where everyone can reach their full potential. As a group, we will strive to support the career development of the Postdoctoral Research Fellows that we recruit, and to provide them with the optimal environment, including the flexibility, to support their development as the future generation of world-leading researchers.

What does the role entail?

As a Research Fellow, your main duties will include:
- Contributing to the day-to-day management of the Programme Grant and its webpages, including organising workshops, research seminars and hosting visitors;
- Generating and pursuing independent and original research ideas in the appropriate subject area;
- Developing research objectives and proposals and contributing to setting the direction of the research project and team including preparing proposals for funding in collaboration with colleagues;
- Evaluating methods and techniques used and results obtained by other researchers and to relate such evaluations appropriately to your own research;

- Making a significant contribution to the dissemination of research results by publication in leading peer-reviewed journals and by presentation at national and international meetings;
- Working independently and as part of a larger team of researchers, both internally and externally, to develop new research links and collaborations and engage in knowledge transfer activities where appropriate;
- Maintaining your own continuing professional development and acting as a mentor to less experienced colleagues as appropriate;
- Contributing to the training of both undergraduate and postgraduate students, including assisting with the supervision of projects in areas relevant to the project.

These duties provide a framework for the role and should not be regarded as a definitive list. Other reasonable duties may be required consistent with the grade of the post.

What will you bring to the role?

As a Research Fellow, you will have:
- A PhD (or have submitted your thesis before taking up the role) in Mathematics, or a closely allied discipline relevant to the Programme Grant;
- A strong background in a research area relevant to the Programme Grant (WP5 and Theme 4 may be preferred). E.g., expertise in one or more of the following areas: geometric topology, (extended) topological quantum field theories, topological quantum computing, mathematical models of topological phases, and statistical mechanics;
- A strong commitment to the EPSRC Programme Grant: Combinatorial Representation Theory: Discovering the Interfaces of Algebra with Geometry and Topology;
- Good time management and planning skills, with the ability to meet tight deadlines and manage competing demands effectively without close support;
- A developing track record of peer-reviewed publications in international journals;
- Excellent communication skills both written and verbal, and the ability to communicate your research at national and international conferences;
- A proven ability to work well both independently and in a team;
- A strong commitment to your own continuous professional development.

You may also have:
- Experience of pursuing external funding to support research.

How to apply

You can apply for this role online; more guidance can be found on our How to Apply information page. Applications should be submitted by **23:59** (UK time) on the advertised closing date.

As part of your application, please ensure that you upload a CV (including a publication list), and a Research Statement, summarising your research achievements and the current and future potential of your work in the context of the Programme Grant. The research statement should be accessible to readers outside your immediate field of expertise and be at most one side of A4 (minimum font size 11).

Contact information

To explore the post further or for any queries you may have, please contact:

Professor Karin Baur, Professor (Principal Investigator)
Email: K.U.Baur@leeds.ac.uk

OR

Dr Joao Faria Martins, Associate Professor (Co-investigator)
Email: J.FariaMartins@leeds.ac.uk

OR

Professor Paul Martin, Professor (Co-investigator)
Email: P.P.Martin@leeds.ac.uk

Additional information

Faculty and School Information

Further information is available on the research and teaching activities of the [Faculty of Engineering & Physical Sciences](#), and the [School of Mathematics](#).

Working at Leeds

We are a campus-based community and regular interaction with campus is an expectation of all roles in line with academic and service needs and the requirements of the role. We are also open to discussing flexible working arrangements. To find out more about the benefits of working at the University and what it is like to live and work in the Leeds area visit our [Working at Leeds](#) information page.

A diverse workforce

As an international research-intensive university, we welcome students and staff from all walks of life and from across the world. We foster an inclusive environment where all can flourish and prosper, and we are proud of our strong commitment to student education. Within the Faculty of Engineering and Physical Sciences we are dedicated to diversifying our community and we welcome the unique contributions that individuals can bring, and particularly encourage applications from, but not limited to Black, Asian and ethnically diverse people; people who identify as LGBT+; and people with disabilities. Candidates will always be selected based on merit and ability.

The Faculty of Engineering and Physical Sciences are proud to have been awarded the Athena SWAN [Silver](#) Award from the Equality Challenge Unit, the national body that promotes equality in the higher education sector. Our [equality and inclusion webpage](#) provides more information.

Information for disabled candidates

Information for disabled candidates, impairments or health conditions, including requesting alternative formats, can be found under the 'Accessibility' heading on our [How to Apply](#) information page or by getting in touch by emailing HR via hr@leeds.ac.uk.
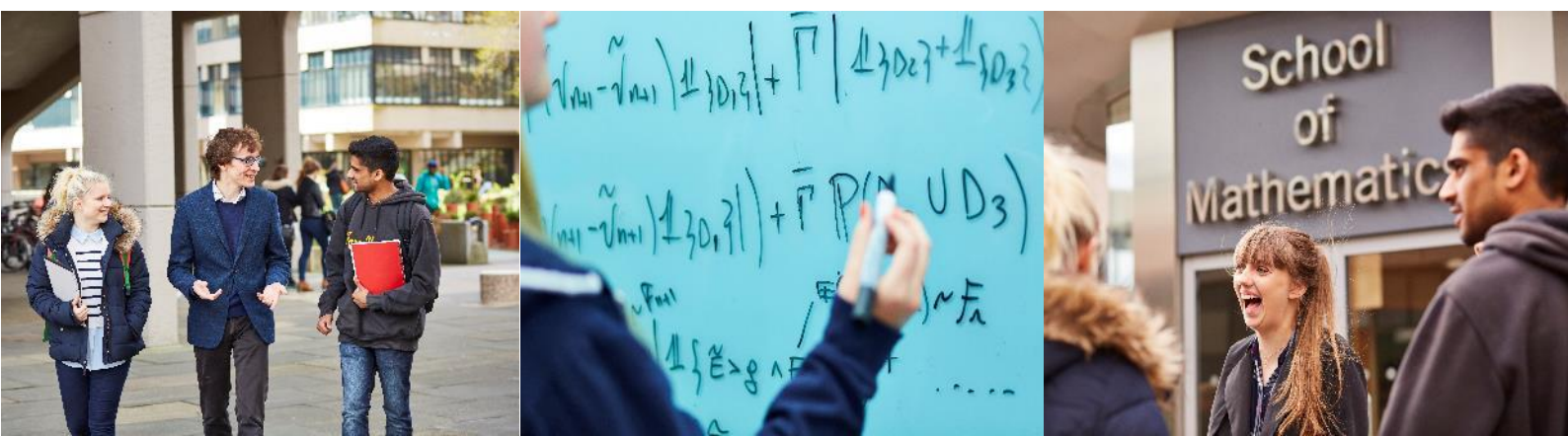
Criminal Record Information
Rehabilitation of Offenders Act 1974
A criminal record check is not required for this position. However, all applicants will be required to declare if they have any 'unspent' criminal offences, including those pending.

Any offer of appointment will be in accordance with our Criminal Records policy. You can find out more about required checks and declarations in our [Criminal Records](#) information page.

Salary Requirements of the Skilled Worker Visa Route

Please note that this post may be suitable for sponsorship under the Skilled Worker visa route but first-time applicants might need to qualify for salary concessions. For more information, please visit [the Government's Skilled Worker visa page](#).

For research and academic posts, we will consider eligibility under the Global Talent visa. For more information, please visit [the Government's page, Apply for the Global Talent visa](#).