



**Job Title:** Research Associate in Representation Theory and/or Graph Combinatorics  
**Grade:** 7  
**Salary:** £34,804 to £40,322 per annum  
**Department:** School of Mathematics  
**Hours/Contract:** Full-time and Fixed-term (Two Posts)  
**Reference:** 1874

**Role Purpose**

Both posts are related to the EPSRC funded project “[Graphs in Representation Theory](#)”.

The objective of the project is to study graphs, hypergraphs and related geometries connected to the representation theory of finite dimensional algebras.

The post holder will work with the PI, Prof [Sibylle Schroll](#) on the representation theory of finite dimensional algebras.

A selection of research topics of the type which are to be addressed are:

1. Constructing geometric and combinatorial models of the module and derived categories and some of their subcategories for finite dimensional algebras.
2. Studying the (Hochschild) (co)homology and its structures (Lie and Gerstenhaber algebras, Tamarkin Tsygan calculus) of classes of tame and wild algebras.
3. Connecting the (co)homological structures of the algebras with the (co)homology of the geometric models.

**Resources Managed**

- Responsible for planning own workload.
- Managing own time to ensure tasks are completed to appropriate deadlines.

Main Duties and Responsibilities	% Time
<ul style="list-style-type: none"> <li>• Working on research related to the project graphs in representation theory and other related topics relevant to the proposal</li> </ul>	60
<ul style="list-style-type: none"> <li>• To write research progress reports and co-author scientific publications in international journals with the PI and other members of the team.</li> </ul>	25
<ul style="list-style-type: none"> <li>• Presentation of results at external meetings and seminars, active participation in working groups and other activities of the Pure Mathematics group at Leicester; minor involvement in teaching activities of the department, as mutually agreed</li> </ul>	15
Internal and External Relationships	
<ul style="list-style-type: none"> <li>• To work together with the PI and other researchers on the project as a team in order to deliver the project objectives on time.</li> <li>• Presentations of results at international conferences and workshops</li> <li>• Establishment of or participation in new research collaborations</li> </ul>	





**Planning and Organising**

- You will co-manage the research project for a timely delivery of the project work-plan.

**Qualifications, Knowledge and Experience**

**Essential**

- Good degree in mathematics.\*
- PhD degree or about to complete a PhD in Pure Mathematics and related areas.\*

**Desirable**

- Documented experience in one or more of the following areas: Auslander-Reiten theory, homological algebra, representation theory of finite dimensional algebras, algebraic geometry and geometric surface models
- Evidence of high level research productivity (e.g. research publications in strong peer reviewed journals, etc.).
- Knowledge of GAP based QPA package and other mathematical software

**Skills, Abilities and Competencies**

**Essential**

- Capability for high quality research\*.
- The ability to work as part of a team, as well as independently.
- Excellent communications skills, including proven ability to present research results to a scientific audience\*.
- Previous research experience in an academic environment.
- Ability to plan, implement and deliver programmes of work.
- Evidence of continued personal development of subject expertise.

**Desirable**

- To be able to prioritise, plan, organise and deliver a programme of work effectively and to the required standard.
- Good interpersonal skills.
- Proven ability to supervise at postgraduate level.
- Teaching experience.
- The publication of papers in a relevant area of research.
- Previous postdoctoral experience.
- Comfortable working both on their own and as a member of a team.

***\*Criteria to be used in shortlisting candidates for interview***





### Teaching Requirements

If requested, you may be expected to undertake teaching, tutoring and administrative duties across a range of modules, particularly in the delivery of teaching modules in China that are part of the Department’s collaborative partnership programmes in the People’s Republic of China.

### Criminal Declaration

If you become an employee, you must inform your manager immediately, in writing, if you are the subject of any current or future police investigations/legal proceedings, which could result in a criminal offence, conviction, caution, bind-over or charges, or warnings.

### VITAL

The University encourages all staff to live our [VITAL values](#) which are:

**Valuing People, Innovators, Together, Accountable, Leaders.**

### Equality and Diversity

We believe that equality, diversity and inclusion is integral to a successful modern workplace. By developing and implementing policies and systems that challenge stereotypes across all aspects of our work, we have a culture that recognises and values the diverse contributions of our staff which benefits everyone. Our strong values of inclusivity and equality support our efforts to attract a diverse range of high quality staff and students, and identify our University as a progressive and innovative workplace that mainstreams equality, diversity and inclusion.

