

Research Associate in Algebraic Geometry

Project Title: Birational Models of Singular Fano 3-folds

REQ200087

As part of the University's ongoing commitment to redeployment, please note that this vacancy may be withdrawn at any stage of the recruitment process if a suitable redeployee is identified.

Project Description

This project is funded by an EPSRC grant entitled "Birational Models of Singular Fano 3-folds". The overall aim is to make progress in the birational classification of Fano 3-folds with terminal singularities, as outputs of the Minimal Model Program. Several models are expected to be birationally rigid, while others will admit birational maps to other Fano varieties or Mori fibre spaces. As a result, a variety of techniques will be engaged, from the method of maximal singularities to the theory of Sarkisov links and explicit computations on Cox rings. As the title suggests, methods from singularity theory and computer algebra will also be used.

The project will last for 24 months, the entire duration of the Research Associate (RA) position and will be undertaken jointly by the RA and Dr Hamid Ahmadinezhad as supervisor/principal investigator (PI).

Job Description

Job Grade: Specialist and Supporting Academic Grade 6

Job Purpose

To conduct research in the area of Algebraic Geometry and in particular in the study of Fano 3-folds. To develop new techniques to investigate birational relations, or the lack of, amongst Fano 3-folds with terminal singularities.

Job Duties

- To work on all aspects of the above project.
- To become familiar with the present literature on birational geometry of singular Fano 3-folds.
- To become familiar with techniques of working with terminal singularities, and their extremal extractions.
- To write research papers suitable for publication in high quality academic journals.
- To disseminate results both at national/international conferences.
- To support the PI by enhancing relationships with existing collaborators and by assisting the establishment of relationships with new collaborators.
- To undertake tasks assigned by the Principal Investigator (Dr Hamid Ahmadinezhad).
- There will be an opportunity to do a small amount of teaching in the Department of Mathematical Sciences, if desired.
- To engage in training programmes in the University (or elsewhere) that are consistent with the needs and aspirations of the project and those of the Department.
- To undertake other duties as may be reasonably requested and that are commensurate with the nature and grade of the post.

Points to Note

The purpose of this job description is to indicate the general level of duties and responsibility of the post. The detailed duties may vary from time to time without changing the general character or level of responsibility entailed.

Special Conditions

All staff have a statutory responsibility to take reasonable care of themselves, others and the environment and to prevent harm by their acts or omissions. All staff are therefore required to adhere to the University's Health, Safety and Environmental Policy & Procedures.

All staff should hold a duty and commitment to observing the University's Equality & Diversity policy and procedures at all times. Duties must be carried out in accordance with relevant Equality & Diversity legislation and University policies/procedures.

Successful completion of probation will be dependent on attendance at the University's mandatory courses which include Respecting Diversity and, where appropriate, Recruitment and Selection.

Organisational Responsibility

Reports to the Principal Investigator.

Person Specification

Your application will be reviewed with respect to meeting the essential and desirable criteria listed below. Applicants are strongly advised to explicitly state and evidence how they meet each of the essential (and desirable) criteria in their application. Stages of assessment are as follows:

- 1 – Application
- 2 – Test/Assessment Centre/Presentation
- 3 – Interview

Essential Criteria

Area	Criteria	Stage
Experience	Background in Algebraic Geometry	1,2,3
	Experience of preparing and/or publishing original work for academic journal papers and conference papers	1
	Research in Algebraic Geometry	1
Skills and abilities	Research in Algebraic Geometry	1,2
	Experience with at least one computer algebra package	1,2,3
	Excellent written and oral communication skills	1,2,3
	Self-motivated with ability to meet deadlines	3
	Excellent interpersonal, and organisational skills	1,3
	Ability to work as part of a team and to collaborate with others	1,3
	Willingness to undertake further training when required	3
Training	Willingness to undertake further training when required	3
Qualifications	PhD (or near completion) in Algebraic Geometry	1
Other	Commitment to observing the University's Equal Opportunities policy at all times.	3

Desirable Criteria

Area	Criteria	Stage
Experience	Knowledge of Sarkisov program	1,2,3
	Knowledge of the theory of maximal singularities	1,2,3
	Knowledge of explicit methods in birational geometry	1,2,3
	Familiarity with the language of Cox rings	1,2,3
	Working in a high-quality academic research environment	1,3
Skills and abilities	Authoring original work, in the highest quality refereed academic journals	1,2,3
	A strong publication track record	1
	Ability and willingness to teach at undergraduate level	1,3
Qualifications	Postdoctoral experience	1

Conditions of Service

The position is **full-time** and **fixed-term** for 24 months. Salary will be on Specialist and Supporting Academic Grade 6 (£30,942 - £40,322 per annum), at a starting salary to be confirmed on offer of appointment.

The appointment will be subject to the University's Terms and Conditions of Employment for Grade 6 and above staff, details of which can be found [here](#).

The University is committed to enabling staff to maintain a healthy work-home balance and has a number of family-friendly policies which can be found [here](#).

The University offers a wide range of employee benefits which can be found [here](#).

We also offer an on-campus nursery with subsidised places, subsidised places at local holiday clubs and a childcare voucher scheme (further details are available at: <http://www.lboro.ac.uk/services/hr/a-z/childcare-information---page.html>)

In addition, the University is supportive, wherever possible, of flexible working arrangements. We also strive to create a culture that supports equality and celebrates diversity throughout the campus. The University holds a Bronze Athena SWAN award which recognises the importance of support for women at all stages of their academic career. For further information on Athena SWAN see <http://www.lboro.ac.uk/services/hr/athena-swan/>