School of Science
Department of Mathematical Sciences

Loughborough University

Research Associate

Algebraic and Geometric Methods in Integrable Systems

Job Ref: REQ180021

As part of the University's ongoing commitment to redeployment, please note that this vacancy may be withdrawn at any stage of the recruitment process if a suitable redeployee is identified.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 is an intra-disciplinary project in Mathematical Sciences that draws ideas from algebra, intergrable systems and geometry of curves. The proposed research could move either towards a more theoretical side, studying objects such as algebro-geometric curves and mathematical amoebas, or a more applied side, studying stability problems of integrable PDEs, using algebro-geometric approaches, depending on the successful candidate's interests as well. No matter which direction the research will take, it is expected to have an impact in the field of Nonlinear Waves as well as Nonlinear Optics. Working knowledge in MATLAB and Mathematics is desirable.

The Department of Mathematical Sciences al Loughborough University offers a vibrant community of researchers who are committed in supporting each other to deliver outstanding research. It consists of six research groups http://www.lboro.ac.uk/departments/maths/research/groups/, in particular we have a well-established internationally renowned research group in Geometry and Mathematical Physics.

Job Description

Job Grade: Specialist and Supporting Academic, Grade 6

Job Purpose:
Conduct research under the direction of Professor Sara Lombardo on the project "Algebraic and Geometric Methods in Integrable Systems". The focus of the project is two-fold: on the more theoretical side, it concerns the study of objects such as algebro-geometric curves and mathematical amoebas, on the more applied side, it aims at formulating a theory of instabilities of certain integrable PDEs using algebro-geometric data.

Job Duties

- To conduct research on the project described above. This will involve a combination of individual work, and collaborative work with others under the supervision of the PI.
- To evaluate the progress made. This will involve regular meeting with the PI, to discuss the progress to report the findings of research undertaken individually.
- To contribute to the dissemination of the research findings by participating to appropriate events such as international conferences, and to prepare journal publications of results arising from the project.
- Be responsible for conducting the day to day running of the project.
- To formulate detailed plans for the project based on broad guidance from the project team.
- To feed back to the project team on progress, to make recommendations for next steps.
- Write up regular progress reports and present outcomes to all Investigators and Collaborators.
- Travel to attend meetings and make presentations both within the project partners working group and to external stakeholders.
- To support the project team by enhancing relationships with existing collaborators and by assisting the establishment of relationships with new collaborators.
- To write research papers suitable for publication in high quality academic journals.
- To attend and contribute to conferences.

- To contribute to project promotion and public engagement events.
- Contribute ideas for new research and enterprise directions.
- Maintain confidentiality at all times and ensure that intellectual property (IPR) agreements are not violated.
- To assist the academic staff in the project team with the supervision of undergraduate MSc and PhD project work and day-today supervision and support of other researchers.
- Where appropriate, to deliver teaching and tutorial sessions to students.
- 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.
- 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, Professor Sara Lombardo

Person Specification

Your application will be reviewed with respect to meeting the essential and desirable criteria listed below. Your application will be reviewed against 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 Mathematics or Mathematical Physics.	1, 3
	Experience of conducting research in Algebra, Geometry, Integrable Systems and/or Mathematical Physics.	1, 3
	Authoring original work for academic journal papers, conference papers or technical reports.	1, 3
Skills and Abilities	Ability to carry out high-level rigorous mathematical research.	1, 3
	Ability to work individually and to collaborate with others.	1, 3
	Excellent written and oral communication skills.	1, 3
	Self-motivated with ability to meet deadlines.	3
	Excellent interpersonal, and organisational skills.	3
	Working knowledge of software such as MATLAB and Mathematica.	1, 3
	Ability to write project reports and make technical presentations to industrial and academic research groups.	1, 3
	Knowledge of relevant Health & Safety issues.	3
Training	Demonstrate evidence of having undertaken further training.	1, 3
Qualifications	PhD (or near completion).	1
Other	Commitment to observing the University's Equal Opportunities policy at all times.	3

Desirable Criteria

Area	Criteria	Stage
Experience	Prior knowledge of the theory of Integrable Systems.	1, 3
	Developing proposals for funding from external agencies.	1, 3
	Working in a high quality academic research environment.	1, 3
	Experience of teaching and / or supervision of students in relevant areas.	1, 3
Skills and Abilities	Authoring original work, in the highest quality refereed academic journals.	1, 3
	A strong publication track record.	1, 3
	Some ability to program.	
Qualifications	PhD (or near completion) in Mathematics or Mathematical Physics or equivalent.	1, 3
Other	Travel / Able to travel Independently / Working patterns	3

Conditions of Service

The position is full-time and fixed-term for 12 months. Salary will be on Specialist and Supporting Academic Grade 6, £29,799 - £38,833 per annum, subject to an annual pay award, at a starting salary to be confirmed on offer of appointment.

The appointment will be subject to the University's normal Terms and Conditions of Employment for Academic and Related 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 are available at http://www.lboro.ac.uk/services/hr/a-z/family-leave-policy-and-procedure---page.html

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/

Informal Enquiries

Informal enquiries should be made to Professor Sara Lombardo, by email at s.lombardo@lboro.ac.uk

Application

The closing date for receipt of applications is **18 February 2018**.