

Research Associate in Physics

Thermally-driven motion of spin textures

Job Ref: REQ260019

As part of the University's ongoing commitment to redeployment, please note that this vacancy may be withdrawn at any stage of the recruitment process if a suitable redeployee is identified.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

You will be part of the project team working on "Thermally-driven motion of spin textures" led by Dr Naëmi Leo, a UKRI Future Leader Fellow (MR/X033910/1, LIONESS). The project will primarily be undertaken in the physics department at Loughborough University and will include collaborations with internal colleagues and facilities (such as the Loughborough Materials Characterisation Centre) as well as with national and international project partners (e.g., EXTREMAG, UK; Durham University, UK). In addition to the Researcher and the PI, the team currently comprises of another postdoctoral researcher as well as a PhD student.

Job Description

Job Grade: Specialist and Supporting Academic Grade 6

Job Purpose

- Your aim will be to quantify the thermally-driven motion of spin textures in hybrid magneto-thermoplasmonic devices harnessing light-controlled thermal gradients. This project will require you (a) to develop a magneto-optical microscopy with custom control options; (b) to develop and implement rigorous domain imaging protocols; and (c) to consolidate the experimental outcomes for academic publication and presentations.

Job Duties

- (a) Development and implementation of experimental setup (including ensuring adherence to safety regulations) for MOKE microscopy under different optical illumination conditions for selective plasmonic heating, using continuous wave and modulated illumination, as well as nano- (in the lab) and femto- to picosecond pulses (at the external research facility Extremag).
- (b) Create well-documented measurement protocols, with data collection following the FAIR standards and implementing data analysis scripts using python-based open-access tools.
- (c) Data analysis, generation of new understanding of thermally-driven motion of spin textures; and dissemination of the obtained methods and scientific results in the form of project reports (to be regularly discussed within the team and LU-internal, national, and international project partners), technical and scientific publications, and via conference presentations.
- (d) While not the focus of the project (device fabrication is planned to be undertaken by other members of the research team), you might also be involved the fabrication of hybrid magneto-thermoplasmonic devices via multi-step nanolithography (using maskless optical lithography, scanning thermal lithography, thin-film deposition and lift-off/etching/ion milling steps), including the characterisation of sample properties (e.g., using AFM, SEM, XRD, or MOKE).

- 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 write research papers suitable for publication in high quality academic journals.
- To attend and contribute to conferences.
- Maintain confidentiality at all times.
- 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 Future Leader Fellow / Project Leader

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
Qualifications	Completed (or nearly completed) PhD degree in Physics, Material Sciences, or a closely related discipline.	1
Experience	Experience with magnetic microscopy techniques, in particular imaging of spin textures via MOKE (or XMCD), as well as instrumentation of related instrumentation (e.g., electromagnets, lock-in detection, heaters, etc).	1,3
Skills and Abilities	Excellent hands-on practical skills, and ability to work flexibly and independently, with competency on using a variety of lab equipment and instrumentation and a methodological approach to problem solving.	1,3
	At least a basic knowledge in programming (e.g., Python, Matlab, C++, etc) applied to data/image analysis.	1,3
	Excellent communication skills, ability to work in a team, and to interact effectively with people of different backgrounds.	1,3
Other	Flexible approach to working hours, and willingness and ability to travel for national and international collaborations and attending conferences.	1,3
	Commitment to observing the University's Equal Opportunities policy at all times.	1,3

Desirable Criteria

Area	Criteria	Stage
Qualifications	PhD studies within the field of magnetism, spintronics, ideally with respect to the analysis of non-uniform spin textures.	1,3
Experience	Experience working with lasers (cw and modulated, ns, ps to fs) and high-power optical illumination (e.g., used for MOKE detection, MOKE imaging, or pumping of magnetic states or plasmonic excitations)	1,3
	Experience with micromagnetic or multi-physics simulations based on either finite-differences (e.g., mumax3) or finite-element codes (e.g., COMSOL, Ansys).	1,3
	Experience in nanolithography and thin-film deposition methods to fabricate and characterise nanostructured metamaterials or spintronic devices.	1,3
Skills and Abilities	Hands-on experience using custom-built experimental setups, development of new experimental schemes, or creation of parts of experimental setups.	3
	Programming knowledge (e.g., python, labview, etc) for experimental instrumentation.	1,3
	Experience and ability to undertake literature reviews and writing of scientific manuscripts (evidenced by a strong publication track record of high-quality papers).	1,3
	Ability to give well-structured technical presentations to broad audiences.	3

Other	Interest to work in the field of the proposed research project.	1,3
	Awareness of health and safety regulations with respect to nanomaterials, use of lasers, electrical and magnetic circuits, and proper handling and waste deposition of chemicals (COSHH). Willingness to develop new safety protocols related to the experimental setups to be developed within the research project.	3

Conditions of Service

The position is FULL TIME and FIXED TERM for 24 months (with a possible extension dependent upon performance and available funding). Salary will be on Specialist and Supporting Academic, Grade 6, £35,608-£46,049 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 STAFF GRADES 6 AND ABOVE, 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/>

Applications

The closing date for receipt of applications is **8 March 2026**..