



UNIVERSITY OF LEEDS

## CANDIDATE BRIEF

Research Fellow in Mathematical Biology or Biological Physics, Faculty of Engineering and Faculty of Biological Sciences



**Salary: Grade 7 (£33,199 – £39,609 p.a.) Due to funding limitations an appointment will not be made above £33,199 p.a.**

**Reference: ENGCP1092**

**Fixed-term for 36 months**

**We will consider flexible working arrangements**

# Research Fellow in Mathematical Biology or Biological Physics

## Schools of Computing and Biology

**Are you an ambitious researcher looking for your next challenge? Do you have an established background in Mathematical or Computational Biology and/or Biological Physics? Do you want to further your career in one of the UK's leading research-intensive universities?**

You will work on a joint project between the Cohen and Kepinski labs aiming to understand the biophysical and molecular basis of gravitropic response in plant roots. You will conduct high quality research, publishable in top-tier journals, both individually and in collaboration with a multidisciplinary team of researchers at the University of Leeds. The Cohen and Kepinski labs combine experimental work and modelling to study the biophysics and biomechanics of plant organ orientation and growth. The research you will conduct is two-fold:

- Use our existing stochastic ODE and PDE models and develop new multiscale models to integrate internal sensory and signal-processing mechanisms with biomechanics of plant root growth;
- Design and implement algorithms for computer vision and data analysis of experimental video-captured data.

Holding a PhD (or close to completion) in physics, computer science or a related discipline, you will have relevant and deep knowledge and experience combining data-driven analysis with mathematical/computational modelling. Experience in stochastic dynamics, differential geometry, and biomechanics would be helpful, as would prior experience with machine learning and computer vision. Some experience with interdisciplinary research across the physical sciences, mathematics and the life sciences would be helpful. A positive, enthusiastic approach to your research is essential.

### What does the role entail?

As a Research Fellow, your main duties will include:

- Carrying out internationally leading research on the gravitropic response of plant roots, in close collaboration with experimentalists and theorists;



- Combining data-driven and theory-driven research to advance both models and experiments;
- Carrying out internationally leading research in biological physics;
- Contributing to the technical development and quality monitoring of the project;
- Achieving objectives specified for projects, while meeting deadlines;
- Communicating ideas and results clearly to a range of people within and outside the team, including reporting at meetings with collaborators, workshops, and conferences;
- Generating high quality models and software, ready for wide (open) dissemination to the research community;
- Contributing code and data to group and public repositories as appropriate;
- Planning and managing your own research activity independently within the strategy identified for the project teams as a whole;
- Generating and pursuing independent and original research ideas in the appropriate subject area;
- Adopting and adapting methods and techniques used, and results obtained by other researchers, and relating such evaluations as appropriate, to your own work;
- Preparing papers for publication in leading international journals and independently writing reports;
- Working both independently and also as part of a larger team of researchers, engaging in knowledge-transfer activities where appropriate and feasible;
- 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 in a relevant area of physics or computer science or another clearly relevant subject area;



- Relevant and deep knowledge and experience in biological physics and/or mathematical biology, evidenced by a strong track record of publications in internationally leading conferences or journals;
- Fluency and extensive experience in software engineering, including software development and management, especially in C, C++ and software libraries (e.g., openCV);
- Relevant experience in data handling and data analysis, ideally in an experimental context;
- Relevant and deep knowledge and experience in the design, implementation and testing of models, including optimisation;
- Willingness to travel to research meetings, conferences or scientific collaborators both in the UK and internationally;
- Good time management and planning skills, with the commitment and ability to deliver to the required standards while meeting tight deadlines;
- Excellent written and verbal communication skills including presentation skills, communicating to colleagues with a range of backgrounds;
- Proven ability and commitment to manage competing demands effectively, responsibly and without close support;
- A proven ability to work well both individually and in a team;
- A commitment to interdisciplinary work across the Schools of Computing and Biology;
- A strong commitment to your own continuous professional development.

You may also have:

- Knowledge and experience in experimental design and hands on experience in conducting experimental research;
- Working knowledge of Machine Learning;
- Familiarity of open source environments and willingness to contribute models, algorithms, and software as appropriate;
- Willingness and ability to undertake limited teaching duties in areas of expertise (including occasional lectures, project supervision, etc.);
- Willingness and ability to undertake research supervision duties in areas of expertise (e.g., assisting PhD students in the lab).



## 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.

Your application should include:

- A supporting statement providing evidence to support each requirement listed on the 'What will you bring to the role' section of the Candidate Brief (no more than two sides of A4, minimum font size 11);
- An academic curriculum vitae, including a list of your publications.

## Contact information

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

**[Professor Netta Cohen](#)**, Senior Lecturer in School of Computing

Tel: +44(0)113 343 6789

Email: [n.cohen@leeds.ac.uk](mailto:n.cohen@leeds.ac.uk)

**[Dr Stefan Kepinski](#)**, Senior Lecturer in School of Biology

Tel: +44 (0)113 343 2865

Email: [s.kepinski@leeds.ac.uk](mailto:s.kepinski@leeds.ac.uk)

## Additional information

### Faculty and School Information

Further information is available on the research and teaching activities of the [Faculty of Engineering](#), the [School of Computing](#), the [Faculty of Biological Sciences](#) and the [School of Biology](#), and the [Centre for Plant Sciences](#).

### A diverse workforce

The Faculty of Engineering is 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.



## Working at Leeds

Find out more about the benefits of working at the University and what it is like to live and work in the Leeds area on our [Working at Leeds](#) information page.

## Candidates with disabilities

Information for candidates with disabilities, impairments or health conditions, including requesting alternative formats, can be found on our [Accessibility](#) information page or by getting in touch with us at [disclosure@leeds.ac.uk](mailto:disclosure@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.

