



The  
University  
Of  
Sheffield.

About  
The  
Job.

**Department of Physics and Astronomy**  
**Faculty of Science**

**Post-doctoral Research Associate in  
Theoretical Biological Physics**

**Pursue the extraordinary**

# Overview

## About the Department

The Department of Physics and Astronomy is composed of 33 academic staff and research fellows, 44 research associates, 9 technical staff, and in excess of 400 undergraduate and over 70 postgraduate students. It has active research programmes in astronomy and astrophysics, inorganic semiconductors, soft matter physics and particle physics and particle astrophysics. All of these groups contribute to a dynamic research environment.

The Department has seen very significant strategic development in recent years. There has also been a large increase in grant income, which has nearly quadrupled since 2000. Undergraduate and postgraduate numbers continue to rise. These factors together give the department a very strong foundation. In the recent (2008) RAE, the department had 20% of its research graded 4\* and 40% graded 3\*, putting it among the top 10 in the UK. The University of Sheffield was recently named number one university in the UK for student experience in the 2014 Times Higher Education Student Experience Survey

Full details of the department's research can be obtained from the departmental web site at [www.shef.ac.uk/physics/](http://www.shef.ac.uk/physics/)

## Job Role

Recent experiments suggest that the cell nucleus, which is disrupted and generally much softer in cancerous cells compared to healthy cells, plays an important role in cell migration.

This project will develop theoretical models whose predictions, once tested, will determine the physical roles of the nucleus in cell migration. From a physics perspective the cell cytoskeleton has been successfully described by the recently developed theory of active gels, which has already proved useful in modelling cell movement. Usually in such models the nucleus of the cell is ignored, however this project specifically addresses the role of the nucleus. Understanding the mechanical roles of a passive elastic object embedded in an active fluid is a challenging problem within the emerging field of the physics of active (out of equilibrium) matter. Elucidating the physical roles of the nucleus in cell migration will make an important contribution to the grand challenge of understanding the physics of life.

The job will involve theoretical modelling including analytical and computational calculations. The successful candidate will work closely with the principle investigator, Dr Rhoda Hawkins, and for some aspects of the project with existing PhD students within the group. The interdisciplinary

nature of the work will require good communication with international collaborators including visiting their labs (France and the United States of America).

## Job Description

1. Perform analytical and computational calculations.
2. Read academic papers, journals and textbooks and attend conferences to keep abreast of developments and use this information to brief colleagues and inform the work of the project.
3. Communicate regularly and effectively with the principle investigator and the rest of the group including presenting results at group meetings.
4. Play an active role within the research group including contributing ideas and supporting PhD students.
5. Be prepared to travel to appropriate conferences and to visit project collaborators in France and the US.
6. Disseminate findings by writing articles for publication in scientific journals and presenting work at international conferences.
7. Exercise good time management to meet deadlines and work towards project milestones.
8. Participate in the wider research community by attending relevant seminars and meetings.
9. Work responsibly and ethically and contribute to the University's mission to discover and understand the world and make it better.
10. Attend suitable continuing professional development courses as appropriate.
11. Any other duties, commensurate with the grade of the post.

## Person Specification

Applicants should provide evidence in their applications that they meet the following criteria. We will use a range of selection methods to measure candidates' abilities in these areas including reviewing your on-line application, seeking references, inviting shortlisted candidates to interview and other forms of assessment action relevant to the post.

	Criteria	Essential	Desirable
Qualifications and experience			
1.	Have (or be about to obtain) a PhD in theoretical biological or soft matter physics.	X	
2.	Have excellent mathematical/computational modelling skills.	X	
3.	Have experience of interdisciplinary work.		X
4.	Have experience in the field of active matter.		X
5.	Have ability to develop creative approaches to problem solving.	X	
Research Management skills			
6.	Ability to work effectively both as an individual and as a member of a team and to communicate with others within a team and with international collaborators.	X	
7.	Ability to plan, manage time and work efficiently.	X	
Communication skills			
8.	Ability to write reports and articles suitable for publication.	X	
9.	Effective oral communication skills to present findings to small and large groups.	X	
Personal effectiveness			
10.	The ability to adapt skills to new circumstances and learn new expertise as dictated by the project	X	

## Further Information

**This post is offered fixed term** for a period of 15 months. The start date is 1 September 2014 (with some flexibility).

### **This post is full-time**

This role has been identified as a full-time post, but we are committed to exploring flexible working

opportunities with our staff which benefit both the individual and the University. Therefore, we would consider flexible delivery of the role subject to meeting the needs of the post. See [www.sheffield.ac.uk/hr/wellbeing/info/wlb.html](http://www.sheffield.ac.uk/hr/wellbeing/info/wlb.html) for more information.

## Benefits

**Terms and conditions of employment:** Will be those for Grade 7 staff.

**Salary for this grade:** £28,972 per annum

More details on salaries, terms and conditions and our wide range of benefits for staff are available at [www.sheffield.ac.uk/hr/reward/structures](http://www.sheffield.ac.uk/hr/reward/structures)

**Closing date: 14 August 2014**

### Health assessment:

Please note that due to the duties of this post, the final appointment will be subject to the completion of a satisfactory health assessment from the University Staff Occupational Health Service.

### Informal enquiries:

For all on-line application system queries and support, contact: [e-Recruitment@sheffield.ac.uk](mailto:e-Recruitment@sheffield.ac.uk) .

For informal enquiries about this job and department, contact: Dr Rhoda Hawkins ([rhoda.hawkins@sheffield.ac.uk](mailto:rhoda.hawkins@sheffield.ac.uk)) or +44 (0) 114 22 24524.

## Selection-Next Step

Following the closing date, you will be informed by email whether or not you have been shortlisted to be invited to participate in the next stage of the selection process. Please note that due to the large number of applications that we receive, it may take up to four working weeks following the closing date before the recruiting department will be able to contact you.

The University of Sheffield is committed to achieving excellence through inclusion.

The University of Sheffield is proud to be a Two Ticks employer  
[www.sheffield.ac.uk/hr/equality/support/twoticks/](http://www.sheffield.ac.uk/hr/equality/support/twoticks/)



The University has achieved the Athena SWAN award for Women in Science, Engineering and Medicine

The Department holds an Athena SWAN Bronze Award which recognises its commitment to gender equality. We are proud to be a department where all staff, regardless of gender, race, sexual

orientation, age, religious belief and disability, work in a supporting environment where they can reach their full potential. Through the University the Department offers a wide range of family friendly policies; including maternity, paternity and adoption leave and flexible working. Details of these are available via <http://www.sheffield.ac.uk/hr/guidance> but if you wish to discuss these or other policies you are welcome to contact our Operations Manager Ms Angie Rollinson [a.rollinson@sheffield.ac.uk](mailto:a.rollinson@sheffield.ac.uk). Any enquiries will be treated confidentially.



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