

Armagh Observatory and Planetarium

POSTDOCTORAL RESEARCH FELLOW

Candidate Information

1. Background Information

Overview

Armagh Observatory was established in 1790 by Archbishop Richard Robinson as part of his dream to see a university in the City of Armagh. It is the oldest scientific institution in Northern Ireland and the longest continuously operating astronomical research institute in the United Kingdom and Ireland. The Armagh Planetarium was founded in 1968 by Dr Eric Lindsay, the seventh Director of the Armagh Observatory. It is the oldest operating Planetarium in the UK and Ireland and has been the public face of astronomy for the past 50 years. The Observatory and Planetarium are located within approximately 14 acres of attractive, landscaped grounds, known as the Armagh Astropark, in close proximity to Armagh City. Together, the Armagh Observatory and Planetarium (AOP) deliver internationally recognised research in astronomy and related sciences and vibrant educational and outreach programmes for all ages.

In April 2016, Armagh Observatory and Armagh Planetarium became one organisation, registered with the Charity Commission. There is a staff complement of 25, including scientific, educational and administrative personnel. Currently there are 6 tenured astronomers in addition to the Director, and a dozen post-doctoral fellows and PhD students.

There is an active visitors programme, and each year AOP hosts several academic visitors.

The Mission of Armagh Observatory and Planetarium is:

“To advance the knowledge and understanding of astronomy and related sciences through interactive engagement and the execution, promotion and dissemination of astronomical research nationally and internationally, in order to enrich the intellectual, economic, social and cultural life of all members of the community.”

Research and Observation

The principal function of AOP research staff is to undertake original research of a world-class academic standard that broadens and expands our understanding of astronomy and related sciences. Important secondary functions include the organisation’s responsibilities to promote, preserve and widen access to the heritage of astronomy at Armagh; maintain the continuity and precision of the unique 220-year meteorological record at Armagh and pursue a vibrant programme of Science in the Community in support of the Northern Ireland Executive’s Science, Technology, Engineering and Mathematics (STEM) Strategy and the strategic goals of the Department for Communities (DfC).

Front-line astronomical research is carried out in several key areas of astrophysics, including: Solar Physics, the Solar System, exo-planets, stars, the Galaxy and external galaxies. Staff regularly obtain telescope time on national and international facilities such as the ESO Very Large Telescope, the Southern African Large Telescope and various spacecraft missions (such as SoHO, IRIS, SDO, Hinode, Stereo, Swift, XMM-Newton, and the Hubble Space Telescope). AOP participates in several international projects including WEAVE, ULLYSES, IPHAS, VPHAS, GOTO, SALT, I-LOFAR and CTA.

Heritage

AOP has an important responsibility to maintain and preserve the fabric of the historic buildings, the continuity and precision of the meteorological archive, the library, historic books and other archives, and the collection of scientific instruments and artefacts built up over more than 225 years of continuous astronomical activity in Armagh. The main historic buildings of the Observatory have unique architectural features and house one of the most valuable collections of scientific books, instruments and archives in Northern Ireland. The organisation's heritage policy is to progressively restore the historic buildings, scientific instruments, and historic books and other archives in its possession, placing the restored material where possible on display or close to its original location in its Georgian Grade A-listed Observatory building.

Education and Outreach

In addition to research activities and in line with ministerial priorities, AOP staff and students participate in a vibrant and wide-ranging programme of Science in the Community through lectures, popular astronomy articles, supervision of schoolwork-experience students and undergraduates, and interviews with the press, radio and television. The AOP Demesne, Grounds and Astropark, have also been developed to include scale models of the Solar System and the Universe, two sundials, two historic telescopes, as well as telescope domes and a Human Orrery.

The principal function of the Planetarium is to promote public understanding of astronomy and science through its on-site educational programme of digital theatre shows, exhibits and interactive activities for schools and the wider public. The Planetarium's educational programme has been developed to complement the core curriculum and to support the Northern Ireland Executive's Science, Technology, Engineering and Mathematics (STEM) Strategy.

Further information

Further information on the Armagh Observatory and Planetarium can be found on our website, www.armagh.space.

2. Job Description

Job Title: Postdoctoral Research Fellow

This is a 2.5-year fixed-term position (with a possible 6 month extension) funded by a consortium grant to Armagh Observatory and Planetarium (AOP) from the Science and Technology Facilities Council (STFC).

Overview of the Post

The Postdoctoral Research Fellow will be responsible for pursuing theoretical research on models for the atmosphere and winds, structure and evolution of stripped helium stars and hydrogen-rich very massive stars (VMS). Objectives include (1) the role of stellar wind mass loss on the evolution of VMS, (2) the associated ionising radiation and stellar feedback of VMS and stripped helium stars.

This research contributes to a wider UK consortium programme BRIDGCE and includes the participation of Prof R Hirschi from Keele University (an expert in the stellar evolution) and Prof. Alison Laird from the University of York (an expert in Nuclear Astrophysics). Regular meetings are anticipated.

Location

The Post Holder will be based at the Armagh Observatory and Planetarium, which is located at College Hill, Armagh, Northern Ireland, BT61 9DB.

Reporting

The Post Holder will report to AOP Professor Jorick S Vink.

Salary

Salary range will be £28,331 - £35,845 (QUB Grade 6 scale). Starting point will be dependent on qualifications and experience.

Hours of Work

This is a full-time post. Flexible working arrangements are available. In addition, on occasion there will be a requirement to work on evenings, weekends and public holidays.

Starting Date

The post will start 1st July 2021 or as soon as possible thereafter. The post is for 2.5 years with a possible 6 month extension dependent on funding.

Holidays

The Post Holder will have an annual leave allowance of 30 days, plus 11 public and privilege holidays.

Pensions

The Post Holder is entitled to join the Northern Ireland Local Government Officers' Superannuation Scheme and will be auto enrolled unless they specifically opt out. Full details available at www.nilgosc.org.uk.

Referees

It is the responsibility of the applicant to arrange for letters of reference to be submitted by three individuals (referees) familiar with their scientific abilities directly to HR@armagh.ac.uk. These letters MUST be received by the application deadline **Friday 12th March 2021 @ 4pm**.

Probation

Confirmation of your appointment will be dependent upon the satisfactory completion of a probationary period of 12 months. If your performance, conduct or attendance during this period is not satisfactory your appointment may be terminated. All appointees will be expected to demonstrate a track record of effective service within this period.

Further Information

Applicants wishing to learn more about the post before deciding may contact Lisa O'Neill (lisa.oneill@armagh.ac.uk).

3. Key Tasks and Responsibilities

Research

- Carry out research on two or more of the winds, atmospheres, structure, and evolution of massive stars.
- Write up research results as papers for publication in major refereed journals.
- Attend and present relevant research at appropriate workshops and conferences as the budget allows.

Miscellaneous Duties

- Play a full part in the academic life of AOP, including participation in discussion meetings and seminars.
- Carry out other duties not specified but within the general scope of the post and capabilities of the post holder, as determined by the Line Manager or the Director.

4. Eligibility Criteria

JOB TITLE: Postdoctoral Research Fellow

Education/Qualification	
<i>Essential</i>	<i>Desirable</i>
<ul style="list-style-type: none"> A PhD or equivalent degree in stellar astronomy or astrophysics. 	<ul style="list-style-type: none"> A good (2.1 or better) first degree in physical and/or mathematical sciences. A thesis in theory of stellar wind winds or atmospheres of massive stars.
Experience	
<i>Essential</i>	<i>Desirable</i>
<ul style="list-style-type: none"> A minimum of 1st author paper in major journals (e.g. MNRAS, A&A, ApJ). Papers in press are acceptable. 	<ul style="list-style-type: none"> At least 2 years' experience of a major stellar atmosphere or stellar evolution code (e.g. CMFGEN, MESA, STARS, ...) At least 1 years' experience developing new code for astrophysical modelling. 2 years' experience modelling at least one of: stellar atmospheres, winds, structure, or evolution.
Skills, Abilities and Knowledge	
<i>Essential</i>	<i>Desirable</i>
<ul style="list-style-type: none"> Excellent understanding of stellar physics Fluency in a programming language, such as FORTRAN. Competence in scripting, graphical and text-processing languages (e.g. bash, LaTeX, IDL, ...) Good written and oral communication skills. Self-motivation and ability to work without supervision. 	<ul style="list-style-type: none"> Evidence of innovation, ambition and leadership in hot massive star research. Fluency in Python Familiarity with version-control software (e.g. git), package building tools (e.g. automake) and multi-processor computing.

Shortlisting Criteria

In addition to the above qualifications and experience, AOP reserves the right to shortlist only those candidates who satisfy one or more of the desirable criteria. Furthermore, particular attention would be given to the candidate research plan and how this would fit within the scope of AOP research on massive stars and complement other research activities at AOP.

5. Additional Information

Postdoctoral Research Fellow

Applications

Applicants should submit:

- Curriculum Vitae (CV)
- Statement of Research Interests (maximum of two pages)
- Names of three referees

To hr@armagh.ac.uk by **4pm on Friday 12th March 2021**. Applicants should also arrange for 3 letters of recommendation to be delivered to the same email address by the same deadline.

It is the candidate's responsibility to ensure that his or her application form is submitted and received by this closing date and time. No late application forms will be considered. No applications or supporting information in respect of an already submitted application, will be considered after this date and time.

Short-listing and Interview Date

It is envisaged that short listing for this post will take place in March 2021.

If necessary, interviews will take place in March/April 2021. . Interviews may be held by Zoom or similar video conference facilities.

Pre-Employment Checks

All offers of employment will be conditional, with the offer being subject to the candidate's relevant pre-employment checks being returned satisfactorily:

- Proof of identity and entitlement to work in Northern Ireland;
- Proof of relevant PhD qualification*;
- Three references.

*** By the date the post is taken up, either a PhD certificate, or an assurance by the PhD awarding University that the paperwork is just a formality, i.e. that all exams have been completed.**

6. Disability Requirements

If you require any reasonable adjustments, due to disability, to enable you to attend any part of the assessment process, please contact Lisa O'Neill (lisa.oneill@armagh.ac.uk). If you have indicated that you have a disability and are successful in the selection process and are being considered for appointment, you may be required to outline any adjustments you consider necessary in order for you to take up an appointment.

7. Equal Opportunity Monitoring Form

Under Section 75 of the Northern Ireland Act 1998 public bodies are required to report on equal opportunity monitoring.

It is the policy of the Governors of the Armagh Observatory and Planetarium to ensure that all eligible persons have equal opportunities for employment and advancement in the Armagh Observatory and Planetarium on the basis of their ability, qualifications and aptitude. The Governors of the Armagh Observatory and Planetarium select those suitable for appointment solely on the basis of merit without regard to an individual's religious belief, political opinion, trade union membership, gender, marital status, sexual orientation, age, disability, race, colour or ethnic origin.

In order to ensure that the equal opportunity policy of the Governors of the Armagh Observatory and Planetarium is effectively implemented, the equal opportunity information provided on application forms will be monitored.