Faculty of Science

Lecturer/Senior Lecturer/Reader

Astrophysics

Further Particulars

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1. Introduction

The University of Bristol’s School of Physics seeks an outstanding candidate for a permanent academic appointment within the astrophysics theme of the School of Physics. An appointment may be made at the Lectureship/Senior Lectureship/Reader level, depending on the experience and calibre of the candidate. The appointee will establish a world-class independent research programme based around the exploitation of state-of-the-art international observing facilities, involvement and/or leadership in major international collaborations, and/or computational modelling of astrophysical phenomena.

The Bristol Astrophysics theme currently comprises seven academic staff (Mark Birkinshaw, Malcolm Bremer, Zoe Leinhardt, Ben Maughan, Steven Phillipps, Diana Worrall, Andrew Young), four research and teaching staff and 11 postgraduate students. The group’s research focusses on the evolution of galaxies and clusters of galaxies; on the fuelling of AGN and the interaction of their output with the environment; and on the formation and evolution of planets. The work is predominantly observational in nature, covering all wavebands, with a significant fraction of work involving computational modelling of the relevant systems, and detailed analysis of large data sets.

Applicants should have an excellent publication record in top-rated journals consistent with their career stage. Their achievement should be evidenced both by high-profile scientific output, and by demonstrable leadership and/or strong involvement within international collaborations. The University seeks applicants with a strong commitment to all aspects of the academic mission, including research, teaching at postgraduate and undergraduate levels, securing grant funding, outreach and knowledge transfer activities, and academic leadership and coordination. We wish to attract the most highly talented individuals from a diverse range of backgrounds and especially encourage applications from women and other groups that are under-represented in academic positions in our field. Section 7 below details how we support...
under-represented groups within the School. This post is full time, 1.0 FTE, but we welcome applications from those considering flexible working (whether full- or part-time)

2. Job Description

a. Main job purpose

To carry out research into astrophysics or cosmology as part of the Bristol astrophysics group, and to undertake teaching and administrative duties as required.

b. Statement of responsibilities

Research
You will develop an independent research programme within the astrophysics theme. You will demonstrate a sustained commitment to authoring internationally outstanding publications. You will supervise PhD research students and postdoctoral research associates. You will be expected to attract external research funding from various agencies – both UK and international – for example STFC, EU, and where possible, industrial or charitable sources. You will be proactive in developing research and grant funding opportunities together with other groups in Bristol, other UK universities and institutions abroad.

Teaching
You will take an active role in providing high quality and innovative teaching in the School of Physics; this will include lecture courses, personal tutoring, problem classes, as well as supervising group and individual research projects, at both undergraduate (BSc and MSci) and postgraduate levels. Teaching responsibilities will include core physics subjects as well as courses that form part of the Physics with Astrophysics BSc and MSci programmes. A contribution to the postgraduate training activities of one or more of the Centres for Doctoral Training (CDT) with which the School is associated.
may also be required (for example the CDT Data Intensive Science, in collaboration with Cardiff University).

**Administration**
You will contribute to the general running of the School by undertaking academic administrative responsibilities as specified by the Head of School. This includes, but is not limited to, roles relating to running academic programmes, undergraduate and postgraduate admissions, examinations and project assessment, outreach activities and coordination within the research group, the School of Physics, and the University, as required by the Head of School. For an appointment at Senior Lecturer or Reader level, relevant leadership experience and willingness to take on key academic leadership roles in the School, including the theme lead for Astrophysics, will be expected. The School operates a workload allocation model which aims to ensure fair and transparent allocation of duties while protecting research time.

c. **Contacts**

**Line managed by:**
- Head of the School of Physics

**Line manager to:**
- Research staff on the role holder’s projects

**Internal Contacts:**
- Academic colleagues in the School of Physics
- School Manager
- Research theme leaders
- School Research Director
- School Education Director
- Director of Physics Graduate School
- Dean of Science
- School and Faculty staff including professional administrative and technical colleagues
• Undergraduate and postgraduate students in the School of Physics
• Staff and students in the wider university community

External Contacts:
• UK and international research collaborators
• UK and international funding agencies
• Schools, industry, and other outreach targets

d. Job hazards / safety critical duties (pre-employment health screening)

The following duties are an intrinsic part of the role and any offer of employment will be conditional upon satisfactory health screening by the University Occupational Health Service:
• Not applicable.

3. The Post: Person Specification

The person specification provides a summary of what is required to carry out this job effectively. It also forms the selection criteria on which the decision on whom to shortlist and then whom to appoint will be made. Please ensure that you demonstrate how you meet these criteria in your application.

Experience, skills and knowledge

Essential:
• Strong record of astrophysics research leading to significant publications.
• Record of securing funding consistent with career stage.
• Ability to build and sustain an independent research programme, consistent with Astrophysics theme and School strategy.
• Potential to achieve excellence in undergraduate and postgraduate teaching, in all areas of physics.
• Excellent organizational and administrative skills.
• Commitment to working within professional and ethical codes of conduct.

Desirable:
• Experience of analysis of data from state-of-the-art astronomical instrumentation.
• Experience of developing codes which simulate astrophysical systems or are used to analyse large astronomical data sets.
• Leadership and/or strong involvement with high profile international astronomy collaborations.
• Involvement in / leadership of science team exploiting a current or near-future observing facility/instrument.
• Strong track record of obtaining funding to support a research programme.
• Experience of delivering high quality teaching at undergraduate and/or postgraduate level
• Experience of supervision and training of postgraduate students.

Relevant qualifications
Essential:
• PhD in physics or equivalent doctoral qualification.

Desirable:
• Qualification in higher education teaching and learning.

Communication and interpersonal skills
Essential:
• Excellent written and oral communication skills in English.
• Ability to communicate effectively with students and staff, in both formal and informal settings.
• Potential for scientific and academic leadership.

Desirable:
• Experience of outreach and knowledge transfer activities.
Other criteria:

Essential:

- Understanding of and willingness to engage with all activities of the group, School and University, including appropriate management and administration as required by the role.
- Commitment to ongoing personal development across all areas of responsibility, including the development of teaching skills through the HEA certified CREATE programme in Bristol, at the appropriate level.
- Able to start work by October 2019 or as soon as possible thereafter.

4. The School of Physics

School of Physics

The H.H. Wills Physics Laboratory, which houses the School of Physics, is based in the heart of the University of Bristol campus in the centre of the city. The School is at the forefront of UK physics. Its internationally renowned research encompasses a wide range of topics within the broad themes of:

- Astrophysics
- Quantum and Complex Matter
- Quantum Engineering technologies
- Particle Physics
- Materials and devices
- Theory of Condensed Matter and Quantum Information

There has been substantial investment in research facilities for the School in recent years. The University’s state-of-the-art Centre for Nanoscience and Quantum Information accommodates our Quantum Engineering Technologies Theme in a purpose-designed building (attached to Physics) which provides one of the lowest
vibration research centres in the world. Other well-appointed facilities include a specialist materials preparation suite; a dedicated electronics lab; specialist labs for materials analysis; and a well-supported mechanical and glass workshop. The University’s high-performance computer suite BlueCrystal (600 TFlops) and the University’s Cleanroom suite are also located in the Physics building. We benefit from our own library and a number of dedicated informal learning spaces and computer labs for undergraduates.

The School generates income of around £22M, including research income of approximately £11.5M, and teaching income of approximately £7.3M. In recent years, investment in new top-flight staff has seen the School grow to 52 academics, of whom 20 are professors. Postdoctoral research staff and independent research fellows typically number 45-50 and we also have several visiting academics and research active emeritus professors. A strong professional services team, comprising 44 technical and administrative staff, help to ensure that research and teaching run efficiently. Our large community of around 160 postgraduate students and over 600 undergraduate students adds to the School’s intellectually vibrant and friendly atmosphere. In the UK’s 2014 Research Excellence Framework (REF) 81.7% of the research papers submitted from Bristol to the Physics Unit of Assessment panel were judged to be of the high 3* or 4* quality. Overall, we achieved a rating of 85% in the 3*/4* category and a grade point average of 3.08. We submitted close to 100% of our eligible academic staff into the REF exercise and as a result were rated 4th in the intensity-weighted ranking of all physics departments in the UK (Times Higher Education Supplement).

The School holds an Athena Swan Bronze award and has been given Juno practitioner status by the Institute of Physics, both in recognition of our commitment to advancing women’s careers in science, technology, engineering, maths and medicine (STEMM) employment in higher education and research and for ensuring equal opportunity for all.
The School is one of the most popular destinations for undergraduate Physics students in the UK, consistently recruiting well above the UK average both in terms of student numbers and entry standards. We provide a range of highly regarded, IOP accredited, three-year BSc and four-year MSci undergraduate degree programmes. Some of these involve a year in industry or a year in continental Europe. Degrees are offered in Physics, Physics with Astrophysics, and Theoretical Physics. Joint degrees are offered in Physics and Mathematics, Physics and Philosophy, Chemical Physics and Physics with Innovation. Our staff are passionate about teaching and are constantly seeking to improve the quality of the student experience. All our programmes are informed by our research and include a broad range of options which introduce our students to cutting edge concepts and current research problems. The excellence of our teaching provision has been underpinned by a £7M investment to provide high standard undergraduate teaching labs, library and on-line resources, and lecture theatres. We also boast a six-metre radio telescope which is available for undergraduate project work.

Postgraduate study is to masters or PhD level including a one-year taught masters programme in Functional Nanomaterials and a one-year taught masters programme in Nuclear Science and Engineering. Three EPSRC-funded Centres for Doctoral Training (CDT) are led from Physics: Functional Nanomaterials (joint with the School of Chemistry); Quantum Engineering (joint with the Faculty of Engineering); and Condensed Matter Physics (joint with the University of Bath). We are partners in the UKRI CDT in Artificial Intelligence, Machine Learning and Advanced Computing; the Nuclear Futures CDT; and the South West Nuclear Hub which supports the Government’s Nuclear Industrial Strategy.

The School has a distinguished history of achievements in Physics. Former heads include Sir Charles Frank (crystal growth, liquid crystals) and Nobel Laureates CF Powell (whose discovery of the $\pi$ meson marked the birth of modern particle physics), and Sir Nevill Mott (solid state physics). The Aharonov-Bohm effect and the Berry phase are also Bristol discoveries.
5. The Faculty of Science

The Faculty of Science is one of the six faculties that form the academic organisation of the University of Bristol. The Faculty is a diverse and vibrant community of around 3,600 undergraduate and 800 postgraduate students, 280 permanent academic staff, 350 research staff and over 200 professional services staff. The Faculty contains 32 Fellows of the Royal Society, 3 Academicians of the Academy of Social Sciences, 1 Fellow of the National Academy of Sciences, and 2 Fellows of the British Academy. Following restructuring, from 1 August 2018, the Faculty will consist of the Schools of Chemistry, Earth Sciences, Geographical Sciences, Mathematics, and Physics (the Schools of Biological Sciences and Experimental Psychology move to the new Faculty of Life Sciences on that date). The individual successes of these schools have played a major part in establishing the University of Bristol’s excellent reputation, and we will work closely with colleagues in the new faculty to explore opportunities created by this restructuring.

The Faculty has established good cross-School and cross-Faculty links in teaching and research, supported by outstanding professional services staff and world-class facilities, and offers an outstanding intellectual environment for both its staff and its undergraduate and postgraduate students. Our educational strategy is focused on providing a high quality and academically challenging educational experience to all of our students, and staff are engaged in enabling students to achieve their potential. In particular, the Faculty of Science has been highly successful in winning competitive funding from UK Research Councils and other agencies to develop Centres and Partnerships for Doctoral Training (CDTs/DTPs). These concentrate on areas of national need and emerging and interdisciplinary research themes, and have involved fruitful collaborations between Schools in the Faculty and across the University, as well as across the HE sector. Full details about the CDTs and DTPs in the Faculty can be found at http://www.bristol.ac.uk/doctoral-college/centres/.
The Faculty is also proud of the high quality of its research; the Research Excellence Framework (REF) 2014 ranked the University of Bristol in the top five institutions in the UK for research, based on analysis that takes into account the percentage of staff submitted. When analysed in the same way, the Schools in the Faculty of Science collectively rank in the top three in the UK, when compared against similar groupings in other research-intensive universities, with an average of 96% of eligible staff submitted, reflecting our strength in depth. In particular, Geographical Sciences was ranked number 1 across the UK, and Earth Systems and Environmental Sciences joint 2nd. We promote a culture and support an environment that enables science of the highest academic quality, and which maximises the impact of our research in both an academic as well as the broader societal context.

There are strong and successful collaborative research interactions throughout the Faculty; some highlights include behavioural genetics and epidemiology, climate change, nuclear research, quantum engineering, and synthetic (chemical) biology. Schools in Science have also been successful in developing external links and awards; for example, the School of Earth Sciences has a strong collaboration with BHP Billiton. A particularly valuable partnership of key strategic importance exists between the School of Mathematics and GCHQ, who work together within the Heilbronn Institute for Mathematical Research. Staff across the Faculty also work closely with the University Research Institutes which help to foster multi-disciplinary research which is world-leading and which has helped us focus on recent funding calls such as the Global Challenges Research Fund.
6. **The University and the City of Bristol**

The University of Bristol’s roots date back to 1876. Since its formation it has become one of the leading institutions among the UK’s Russell Group of universities and operates globally, where it is recognised for its research and academic excellence.

The University has a strong interdisciplinary approach and regularly features among the top-ranking institutions in global league tables.

The University of Bristol’s mission is ‘to pursue and share knowledge and understanding, both for their own sake and to help individuals and society fulfil their potential’. This is underpinned by a vision where the University of Bristol is an international powerhouse of learning, discovery and enterprise, whose excellence is acknowledged locally, nationally and globally, and that is:

- dedicated to academic achievement across a broad range of disciplines, and to continuous innovation and improvement
- research-intensive, supporting both individual scholarship and interdisciplinary or thematic research of the highest quality
- a centre for intellectually demanding, research-informed education that nurtures independence of mind and helps students achieve their personal goals and serve society’s needs, both during and after their time here
- an inclusive and collaborative community of scholarship that attracts and retains people with outstanding talent and potential from all walks of life and all parts of the world
- a stimulating and supportive environment for all students and staff, distinguished by a commitment to high standards, respect for the individual and a strong sense of collegiality
- committed to operating in a sustainable manner
- engaged with society’s interests, concerns, priorities and aspirations
• a major contributor culturally, environmentally and economically to Bristol and the South West
• well led and responsibly run, with an emphasis on consultative decision-making and open communication as well as personal responsibility and accountability

Key to Bristol’s vision is a clear and consistent articulation of and dialogue with its many stakeholder and publics about the wide range of research carried out at the Institution and hence is often featured in many national and international media. It has a proud history of two-way dialogue as part of its research activities and addresses the world’s key challenges through an interdisciplinary approach.

The University also plays a lead role in the city of Bristol’s cultural and economic well-being and carries out an extensive programme of events and activities on behalf of the city, as well as being a keen supporter of partner organisations’ activities.

For more information, please see http://www.bris.ac.uk/university/.
7. The University’s Commitment to Equality and Diversity and a Positive Working Environment

As a leading global institution, we are keen to attract the most highly talented individuals from a diverse range of backgrounds. Further information on our commitment to equality and diversity can be found at: http://www.bris.ac.uk/jobs/diversity.html.

Within the School of Physics, Equality, Diversity and Inclusion is a key part of our vision for the future strength of the School. We are determined that every student and staff member should be able realise their academic and personal potential irrespective of their gender, sexual identity, sexual orientation, ethnicity, disability and economic background. The Equality, Diversity and Inclusion group meets regularly with the aim to translate this vision into concrete actions that make a difference. Recent initiatives include establishment of the Women in the School of Physics network and a LGBT awareness training event.

The University’s Positive Working Environment (PWE) agenda aims to make working life at the University of Bristol productive, rewarding, enjoyable and healthy for all colleagues. To find out more about PWE please visit http://www.bristol.ac.uk/pwe/.

Within the School of Physics, recent initiatives to promote PWE include the introduction of a more comprehensive and transparent Workload Allocation Model, improvements to the mentoring system for early career researchers, and improvements to the guidelines for staff reviews to focus more on identifying and highlighting PWE issues to the Head of School.
As part of the process of modernising its pay and grading systems, the University has introduced career pathways for academic staff. What this means is that all members of academic staff have a clear career pathway involving a series of levels with distinct role profiles, each with its unique requirements. Each profile sets out what is expected of an academic at the particular level. The role profiles also set out a collection of competencies expected for each level.

This post is located on Pathway One - academic roles that combine teaching, research and administrative duties.
9. **Terms and Conditions**

(a) We would like the successful applicant to take up the appointment from 1st September 2019 or as soon as possible thereafter.

(b) The post is located in the School of Physics, Faculty of Science, at the H.H. Wills Physics Laboratory at the University of Bristol, Tyndall Avenue, Bristol BS8 1TL.

(c) This role is located on Pathway One and will be appointed at either Profile Level b, c or d of the University’s Academic Pathways depending on the experience and calibre of the candidate. The successful candidate will be appointed as a Lecturer (b/c) or Senior Lecturer/Reader (d).

(d) The salary will be on Grade J (profile b) in the range £37,345 - £42,036 or Grade K (profile c) in the range £43,267 - £48,677 or Grade L (profile d) in the range £51,630 - £58,089. For further information on salary scales please see: [http://www.bris.ac.uk/hr/salaries/](http://www.bris.ac.uk/hr/salaries/).

(e) The appointment will be subject to the terms and conditions for staff on grade J and above, details of which can be found at: [http://www.bris.ac.uk/hr/terms/jandabovestaff.html](http://www.bris.ac.uk/hr/terms/jandabovestaff.html).

(f) This post is full time, 1.0 FTE, but we welcome applications from those considering flexible working (whether full- or part-time).

(g) The post will be offered on a permanent/open ended contract, subject to satisfactory performance.

(h) Subject to the rules of the scheme, the post holder may participate in the Universities’ Superannuation Scheme (USS). Further information on the scheme can be found at [www.uss.co.uk/](http://www.uss.co.uk/). Unless newly appointed staff members declare in writing a wish not to participate in the USS, they will be deemed to be members from the start of employment, and contributions will be deducted accordingly. As a consequence of participating in this Scheme, University staff will be contracted out of the earnings-related part of the State Pension Scheme.

(i) A Pension Salary Exchange scheme is in operation in order to increase take-home pay and save costs. For more information see: [http://www.bristol.ac.uk/hr/salaries/sal-exchange/](http://www.bristol.ac.uk/hr/salaries/sal-exchange/).
(j) Details of the University Relocation Expenses policy for staff relocating to take up post are available from:
http://www.bris.ac.uk/hr/resourcing/practicalguidance/appointment/relocation1.html.

(a) The University has a Continuing Professional Development (CPD) scheme called CREATE. All staff in pathway 1 roles are required to complete the appropriate levels of the CREATE CPD scheme or TLHP (PgCert) unless they are able to provide evidence that meets the scheme criteria for recognition of prior qualifications. Completion of the appropriate levels of CREATE/TLHP is a prerequisite for progression to profile level d. It is also a requirement of the role that those appointed at level d1 complete the appropriate levels of CREATE/TLHP within the first year of appointment. For further information see:
http://www.bristol.ac.uk/staffdevelopment/academic/create/.
10. Application Procedure and Selection Process

Please visit our web site at www.bris.ac.uk/jobs, enter the vacancy number ACAD103847 into the job search and follow the link to the on-line application process.

Further information on the University’s application process can be found at: http://www.bristol.ac.uk/jobs/application-process.html.

Please note the following:

- Applications should include brief research and teaching statements, of about one-page A4 each in addition to a full resume (curriculum vitae).
- A Selection Panel has been established to review all applications for this post and to conduct interviews of short-listed candidates.
- Short-listing is expected to take place in April 2018.
- The closing date for applications is 23.59 on 14\textsuperscript{th} April 2019.
11. Additional Information

Further information
For an informal discussion about the post, please contact one of the persons below:

Name: Professor Malcolm Bremer, Head of Astrophysics
Address: H.H. Wills Physics Laboratory, Tyndall Avenue, Bristol, BS8 1TL
Telephone: +44 (0)117 928 8764
E-mail: m.bremer@bristol.ac.uk

Name: Professor Nigel Wilding, Head of the School of Physics
Address: H.H. Wills Physics Laboratory, Tyndall Avenue, Bristol, BS8 1TL
Telephone: +44 (0)117 928 8761
E-mail: head-phys@bristol.ac.uk