1   Advertisement

Post Title: Research Fellow in Cosmology
School/department: Mathematical and Physical Sciences
Hours: full time considered up to a maximum of 1.0 FTE
Requests for flexible working options will be considered (subject to business need).
Location: Brighton, United Kingdom
Contract: fixed term until 31 March 2026 (36 months)
 Reference: 10866
Salary: starting at £36,333 to £43,155 per annum,
Placed on: 3 April 2023
Closing date: 10 May 2023   Applications must be received by midnight of the closing date.
Expected Interview date: to be confirmed
Expected start date: negotiable between 1 April 2023 and 1 October 2023

We invite applications for a Postdoctoral Research Fellowships in Cosmology at the University of Sussex. We are seeking a talented and creative cosmologist with demonstrably strong contributions to research at doctoral or post-doctoral level. Of particular interest are applicants to work with Dr Robert E. Smith in the field of theoretical and numerical large-scale structure formation and evolution (for a list of recent projects click here).

The PDRA position will primarily be focused on preparing for the upcoming Euclid and Rubin Telescope cosmology surveys, and in particular helping to develop and validate the complete end-to-end forward modelling pipelines with particular emphasis on gravitational lensing and galaxy clustering applications.

We are also members of the Virgo Consortium and as such have significant access to the DiRAC supercomputers, COSMA7 and COSMA8, as well as our in-house Apollo2 cluster. High Performance Computing experience would therefore be desirable, but not essential.

Consideration will also be given to any outstanding applications from other relevant areas of cosmology and astro-particle physics. In addition, the successful candidate will also have the opportunity to pursue their own independent research interests.

This position is one of seven funded by the Science Technology Facilities Council (STFC) under the Astronomy Centre's consolidated grant. The Astronomy Centre has a fantastic combination of theoretical, numerical and observational expertise, focused on extragalactic science (see http://astronomy.sussex.ac.uk). **You will automatically be considered for one of the seven similar vacant positions in the Department of Physics and Astronomy if you meet the person specification selection criteria.**

Successful candidates will be expected to assist in the teaching and supervision of students within the group.

A CV, including publication list, and statement of research interests and skills should be

included with your application. Candidates should also supply the names and email addresses of 2 or 3 referees.

Please contact Dr Robert Smith (r.e.smith@sussex.ac.uk) or Dr Stephen Wilkins (s.wilkins@sussex.ac.uk) for informal enquiries.

The University is committed to equality and valuing diversity, and applications are particularly welcomed from women and black and minority ethnic candidates, who are under-represented in academic posts in Science, Technology, Engineering, Medicine and Mathematics (STEMM) at Sussex.

Please note that this position may be subject to ATAS clearance if you require visa sponsorship.

For full details and how to apply see our vacancies page

The University of Sussex values the diversity of its staff and students and we welcome applicants from all backgrounds.

Please note: The University requires that work undertaken for the University is performed from the UK.

2.   The School / Division

Please find further information regarding the school at http://www.sussex.ac.uk/mps/.

3.   Job Description

Job Description for the post of: **Research Fellow in Cosmology**

Department: Physics and Astronomy

Section/Unit/School: Mathematics and Physical Sciences

Location: Pevensey II/Pevensey III

Grade: Research Fellow I, Grade 7

Responsible to: Principal Investigator through to Head of School

Key contacts: Members of research group, members of faculty within the School and University.

Research Fellow I is an early career-grade research position. Post-holders will be expected to contribute to the work of the research team, and to develop their research skills with support from more experienced members of staff.

PRINCIPAL ACCOUNTABILITIES

1. To engage in individual and/or collaborative research activity resulting in high-quality publications; and to develop research funding and knowledge exchange income

individually or in collaboration with others, as appropriate, depending on the size and scope of the bid.

2. To contribute to School teaching activities

KEY RESPONSIBILITIES

1. **Research, Scholarship & Enterprise**

    1.1. Develop research objectives and proposals for own or joint research, at acceptable levels, with assistance if required.

    1.2. Conduct research projects individually and in collaboration with others.

    1.3. Analyse and interpret research findings and draw conclusions on the outcomes.

    1.4. Produce high-quality research outputs for publication in monographs or recognized high-quality journals, and contribute to the School's REF submission at acceptable levels of volume and academic excellence.

    1.5. Contribute to the preparation of proposals and applications to external bodies, for example for funding purposes.

    1.6. Individually or with colleagues, explore opportunities for enterprise activity, knowledge exchange income and/or consultancy, where permissible.

    1.7. Build internal contacts and participate in internal networks and relevant external networks in order to form relationships and collaborations.

    1.8. Continually update knowledge and understanding in field or specialism, and engage in continuous professional development.

2. **Teaching & Student Support**

    2.1. Undertake teaching duties, if required.

    2.2. Assist in the assessment of student knowledge and supervision of student projects if required.

    2.3. Assist in the development of student research skills, for example, as part of a postgraduate supervision team.

3. **Contribution to School & University**

    3.1. Attend and contribute to relevant School and project meetings.

    3.2. Undertake additional duties, as required by the Principal Investigator and/or Head of School.

4. **Role-specific duties**

    4.1 To carry out original research in the area of large-scale structure cosmology, in one or more of the following areas: weak gravitational lensing, galaxy clustering, numerical simulations of large-scale structure formation, nonlinear modelling of galaxy survey observables.

4.2 With the goals of: leading and supporting work related to the construction and validation of the Euclid mock, lensing and galaxy clustering, forward modelling pipeline; contributing to the modelling of observables for the Rubin Observatory's LSST, within the context of the DESC collaboration.

4.3 Participate in organising the group's regular meetings and seminars.

This job description sets out current duties of the post that may vary from time to time without changing the general character of the post or level of responsibility entailed.

INDICATIVE PERFORMANCE CRITERIA

- A PhD (or equivalent scholarly or relevant professional activity)
- Being a lead author in published research or demonstrably important role within a large collaboration
- Other forms of externally recognised professional practice of creative output of a standing equivalent to regular publication of original research.

4. Person Specification

ESSENTIAL CRITERIA

1. Normally educated to doctoral level, or other equivalent qualification, or appropriate level of experience, as appropriate to the discipline.

2. Evidence of engagement in high quality research activity or research software development.

3. Strong presentation skills and the ability to communicate effectively, both orally and in writing, with students, colleagues, and external audiences.

4. Ability to work individually on own initiative and without close supervision, and as part of a small team or larger collaboration.

5. Ability to exercise innovation and creative problem-solving.

6. Excellent organizational and administrative skills.

7. Ability to prioritize and meet deadlines.

8. Excellent IT skills.

ESSENTIAL ROLE-SPECIFIC CRITERIA

1. High level of knowledge and skill in the analysis and/or modelling of weak lensing data from galaxy survey and/or mock survey data and/or

2. High level of knowledge and skill in the analysis and/or modelling of galaxy clustering data and/or mock data and/or

3. High level of knowledge and skill in the generation of state-of-the-art numerical simulations of large-scale structure formation, and/or the generation of mock lensing and galaxy clustering survey data and/or

4. Exceptional demonstrated innovation, skill and knowledge in a relevant area of theoretical or observational cosmology.

5. Established publication record in the area of cosmology, and/or a significant contribution to either Euclid or the Rubin telescopes LSST, as evidenced through leading contributions to various appropriate cosmological scientific working groups.

DESIRABLE CRITERIA

1. Emerging track record of high-quality publications in reputable journals and other appropriate media of similar standing.

DESIRABLE ROLE-SPECIFIC CRITERA

1. Experience with weak lensing and galaxy clustering large-scale structure survey data, in particular its simulation, analysis and modelling.

2. Experience with deep, wide angled redshift and photometric redshift surveys.

3. Broad experience in advanced computational methods and code development in: python, C, C++.

4. Experience with Unix, high-performance computing and OpenMPI/OpenMP.