



1 Advertisement

Post Title: Postdoctoral Research Fellow in Theoretical Physics

School/department: School of Mathematical Sciences/Dept of Physics and Astronomy

Hours: full time or part time hours considered up to a maximum of 1.0 FTE

Requests for [flexible working](#) options will be considered (subject to business need).

Contract: fixed term for up to 36 months, or 30 April 2024, whichever earliest.

Reference: 5251

Salary: starting at £33,797 to £40,322 per annum, pro rata if part time

Placed on: 5 January 2021

Closing date: 19 January 2021. Applications must be received by midnight of the closing date.

Expected interview date: Last week of January 2021

Expected start date: as soon as possible, 1 September 2021 at the very latest

We invite applications for a full-time postdoctoral position in High Energy Theory based at the Department of Physics and Astronomy of the University of Sussex.

This position is funded by the UK 'Network of clocks for measuring the stability of fundamental constants' consortium (QSNET). The consortium aims to build a network of dissimilar clocks to search for spatio-temporal changes in fundamental constants. Our partners in the network are the National Physical Laboratory, Imperial College London, and the University of Birmingham.

The position is devoted to theoretical research in high energy physics broadly defined. We are particularly interested in applicants with broad research experience in beyond the standard model physics, particle-astrophysics, including dark matter, and cosmology and willing to work in close contact with atomic, molecular and optical (AMO) experimentalists. The postholder will work under the supervision of Prof. Xavier Calmet.

The postholder will benefit from close interactions with the ITCM Group at the University of Sussex led by Prof. Matthias Keller who is a member of QSNET. They will also benefit from the lively research environment of the Sussex Theoretical Particle Physics (TPP) and Mathematical Physics (MP) groups. TPP is also a member of the related consortium QUEST-DMC funded under the same Quantum Technology for Fundamental Physics programme of the Science and Technology Facilities Council. They will also benefit from the consortium's network international partners, including theorists at the University of Delaware and at the Kavli Institute for the Physics and Mathematics of the Universe at the University of Tokyo.

Potential candidates are strongly encouraged to make informal contact with Prof. Xavier Calmet (x.calmet@sussex.ac.uk).

Late applications may be considered until the post has been filled.

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.

For full details and how to apply see our [vacancies page](#)

2. The School / Division

The School of Mathematical & Physical Sciences

The School of Mathematical and Physical Sciences was created in 2009 as part of a University wide restructuring. It brings together two outstanding and progressive departments – Mathematics, and Physics & Astronomy. The School aims to capitalise on the synergy between these subjects to deliver new and challenging opportunities for faculty and students.

The School of Mathematical and Physical Sciences combines pioneering research and stimulating teaching in an interdisciplinary academic setting. The faculty work at the frontiers of their fields, as is reflected in the recent growth of both subjects. Each department has a number of thriving research groups and links with outside agencies.

The Head of School is Professor Philip Harris. He is supported in his role by an Executive Committee consisting of the Heads of Department, the Director of Teaching and Learning, Director of Student Experience, Director of Recruitment and Admissions, Director of Research and Knowledge Exchange, Director of Doctoral Studies, School Administrator, Technical Services Manager, Director of Diversity and Equality, and a student representative.

The Department of Mathematics

The Department of Mathematics currently has 24 faculty divided into six research areas: Analysis and PDEs, Geometry and Topology, Mathematics Applied to Biology, Mathematical Physics, Numerical Analysis and Scientific Computing, and Probability and Statistics.

In the 2014 research excellence framework (REF), 81 per cent of the research outputs in Mathematics at Sussex were rated as world-leading (4*) or internationally excellent (3*). Mathematics at Sussex was ranked 21st in the UK in a recent league tables [Guardian 2017]. It also repeatedly scores well in the UK National Student Survey.

The Department has more than 370 undergraduate students, 99 MSc students, more than 50 PhD students and 2 research fellows.

Research groups in Mathematics

Analysis and PDEs

<http://www.sussex.ac.uk/apde/>

Mathematics Applied to Biology

<http://www.sussex.ac.uk/mab/>

Mathematical Physics

<http://www.sussex.ac.uk/math/research/ms>

Numerical Analysis and Scientific Computing

<http://www.sussex.ac.uk/nasc/>

Geometry and Topology

<http://www.sussex.ac.uk/math/research/geotop>

Probability and Statistics

<http://www.sussex.ac.uk/math/research/pas>

The Department of Physics and Astronomy

The Physics & Astronomy Department currently has 42 faculty divided into five research groups: Astronomy; Theoretical Particle Physics; Experimental Particle Physics; Materials Physics; and Atomic, Molecular & Optical Physics, carrying out internationally leading research in all these areas.

We are part of the South East Physics Network (SEPNet) – a consortium of the nine physics departments of the University of Sussex, University of Kent, Queen Mary University of London, Royal Holloway University of London, Southampton University, University of Surrey, University of Portsmouth, University of Hertfordshire, and the Open University. This was established with substantial government funding to support vital UK science research, teaching and development.

The Department is ranked 15th in the UK according to the Guardian University Guide (2018) including being ranked 1st for graduate prospects. We score very well on the National Student Survey including 100% for overall satisfaction in 2013.

The Department has approximately 350 undergraduate students, 30 MSc students, over 110 PhD students and 40 postdoctoral fellows.

Research groups in Physics & Astronomy

The Astronomy Centre

<http://www.sussex.ac.uk/astronomy/>

The Atomic, Molecular & Optical (AMO) Physics Group

<http://www.sussex.ac.uk/amo>

The Experimental Particle Physics (EPP) Group

<http://www.sussex.ac.uk/epp>

The Materials Physics Group

<http://www.sussex.ac.uk/materials-physics/>

Sussex Centre for Quantum Technologies

<http://www.sussex.ac.uk/scqt/>

The Theoretical Particle Physics (TPP) Group

<http://www.sussex.ac.uk/tpp/>

JOB DESCRIPTION

CORE JOB DESCRIPTION

Job Title:	Research Fellow in Theoretical Particle Physics
Grade:	Research Fellow I, Grade 7
School:	MPS
Location:	Pevensey II
Responsible to:	Principal Investigator through to Head of School
Direct reports:	n/a
Key contacts:	Members of research groups, members of faculty within the School and University.
Role description:	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 also 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 recognised high-quality journals, or performance/exhibition, as appropriate, 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 theoretical physics, within a sub-area relating to the topics funded by the QSNET grant.
- 4.2 Participate in the host group's regular meetings and seminars, assisting with their organisation if required.
- 4.3 Seek and exploit collaborations within the QSNET research consortium.

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
- Pursuing a line of independent research within a research group.
- Publishing research (either from a recently completed PhD or new original research).
- Other forms of externally recognised professional practice of creative output of a standing equivalent to regular publication of original research.
- Initiating, developing or participating in links between the University and external bodies such as business and industry, the professions, community organisations and policy-makers.
- Evidence of successful engagement in teaching or supervision.

PERSON SPECIFICATION

ESSENTIAL CRITERIA

1. Normally educated to doctoral level, or other equivalent qualification, or appropriate level of experience, as appropriate to the discipline (see role-specific criteria below).
2. Evidence of engagement in high-quality research activity.
3. Excellent presentation skills, with 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 team.
5. Ability to exercise a degree of innovation and creative problem-solving.
6. Excellent organisational and administrative skills.
7. Ability to prioritise and meet deadlines.
8. Excellent IT skills.

ESSENTIAL ROLE-SPECIFIC CRITERIA

1. High level of knowledge and skill in theoretical physics.
2. Established publication record in the area of theoretical physics.
3. Willingness and ability to travel to collaborative meetings and conferences as required.

DESIRABLE CRITERIA

1. Emerging track record of high-quality publications in reputable journals and other appropriate media of similar standing.
2. Experience of generating research or knowledge exchange income.

DESIRABLE ROLE-SPECIFIC CRITERIA

Experience in one or more of the specific: broad research experience in beyond the standard model physics, particle-astrophysics, including dark matter, and cosmology and willingness to work in close contact with atomic, molecular and optical (AMO) experimentalists.