



## 1 Advertisement

**Post Title:** Postdoctoral Research Associate in Theoretical Particle Physics

**School/department:** Mathematical and Physical Sciences/Physics and Astronomy

**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 for 24 months.

**Reference:** 10387

**Salary:** starting at £36,333 to £43,155 per annum, pro rata if part-time.

**Placed on:** 12 July 2023

**Closing date:** 14 July 2023. Applications must be received by midnight of the closing date.

**Expected interview date:** To be confirmed

**Expected start date:** 01 October 2023

A postdoctoral research associate is sought to join the South-Eastern Particle Theory Alliance (SEPTA), a consortium composed of Royal Holloway, University of London, University College London and the University of Sussex. The successful applicant will join a research group working on a wide range of topics covering quantum field theory and quantum gravity, particle physics, phenomenology, and particle astrophysics and cosmology.

This position is devoted to research in the area of quantum field theory and quantum gravity, and will be based at the University of Sussex. We are broadly interested in applicants with experience in any of the following fields: quantum and higher curvature gravity, graviton-mediated scattering, fundamental theories of gravity and matter, UV completions of the standard model, quantum critical points, renormalization group methods, formal aspects of field theory such as large  $N$  equivalences, dualities, methods from supersymmetry, AdS/CFT. Applicants with an interest in the asymptotic safety conjecture for gauge theories or gravity are particularly encouraged to apply.

Applicants will also benefit from the close links to the Sussex Astronomy Centre and to the Experimental Particle Physics groups at Sussex and RHUL, and from the NEXt Institute, a regional particle physics alliance in the South-East of England including the two groups, the Rutherford Appleton Laboratory and the University of Southampton. Sussex is also a founder-member of the COSMOS consortium for the application of High Performance Computing to cosmology in the UK.

The following materials should be sent by email to [mpsrecruitment@sussex.ac.uk](mailto:mpsrecruitment@sussex.ac.uk) quoting the job reference number above:

- Official Sussex application form (available via the University website [www.sussex.ac.uk/jobs](http://www.sussex.ac.uk/jobs))
- CV, list of publications, and statement of research interests in a single pdf document
- Three recommendation letters.

Interested candidates are encouraged to make informal contact with Daniel Litim ([d.litim@sussex.ac.uk](mailto:d.litim@sussex.ac.uk)).

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

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.*

## 2. The School / Division

Please find further information regarding the school/division at <https://www.sussex.ac.uk/physics/> (Department of Physics and Astronomy) <http://www.sussex.ac.uk/mps/> (School of Mathematical and Physical Sciences)

## 3. Job Description

Job Description for the post of: Postdoctoral Research Fellow in Theoretical Particle Physics

<b>Department:</b>	<b>Physics &amp; Astronomy</b>
<b>School:</b>	<b>Mathematical and Physical Sciences</b>
<b>Location:</b>	<b>Pevensey 2 Building, Falmer, Brighton, UK</b>
<b>Grade:</b>	<b>Research Fellow I, Grade 7</b>
<b>Responsible to:</b>	Principal Investigator through to Head of School
<b>Responsible for:</b>	N/A
<b>Key contacts:</b>	Members of research group, members of faculty within School and University.
<b>Role description:</b>	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 particle physics, within a sub-area relating to the topics funded by our STFC rolling grant (fixed points of quantum field theory).

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 SEPTA 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.

#### **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 (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.

##### **ESSENTIAL ROLE-SPECIFIC CRITERIA**

1. High level of knowledge and skill in theoretical particle physics.
2. Established publication record in the areas of quantum gravity, quantum field theory, or asymptotic safety conjecture, broadly defined
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.
3. Excellent IT skills.

#### **DESIRABLE ROLE-SPECIFIC CRITERIA**

Experience in one or more of the specific fields of the quantum field theory research area: quantum gravity, fundamental theories of particle physics, UV completions of the standard model, 3d or 4d quantum critical points, asymptotic safety conjecture for gauge theories or gravity, graviton-mediated scattering, renormalization group methods, formal aspects of field theory such as equivalences, dualities, exact methods from supersymmetry, AdS/CFT.