



1 Advertisement

Post Title: Research Fellow in Experimental Particle Physics

School/department: School of Mathematical and Physical Sciences, Department of Physics & Astronomy

Hours: Full time. Requests for flexible working options will be considered (subject to business need).

Contract: fixed term until 30/09/2023

Reference: 7444

Salary: starting at £34,304 to £40,927 per annum

Placed on: 13 December 2021

Closing date: 20 January 2022. Applications must be received by midnight of the closing date.

Expected Interview date: TBC

Expected start date: 01 March 2022, or as soon as possible thereafter.

Applications are invited from talented and creative scientists for a Postdoctoral Research Fellowship in Experimental Particle Physics on the DUNE and NOvA neutrino experiments.

On DUNE you will join the team working on software development for the DAQ, including a focus on the physics performance of the trigger. Experience with detector trigger systems from any experiment would be welcome.

On NOvA you will have the opportunity to work towards answering the question of the neutrino mass hierarchy and to develop the search for leptonic CP violation. The group plays leading roles in both the 3-flavour oscillation analysis and the joint analysis with T2K. Across NOvA, reconstruction, machine learning and calibration are areas of specific interest.

The Sussex group has a long history of neutrino research and a number of senior leadership roles internationally, including overall physics analysis coordination for NOvA.

The UK government is contributing £65 million in construction funding for the DUNE project through to 2026, including more than £10 million for the DAQ which is jointly led in the UK by Sussex. Initially for 1.5 years, this is a post that has the potential for seeing the DUNE project right through construction, into data taking and physics exploitation.

Informal enquiries may be addressed to Prof. Simon Peeters (s.j.m.peeters@sussex.ac.uk) or Prof. Jeff Hartnell (j.j.hartnell@sussex.ac.uk).

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 <http://www.sussex.ac.uk/physics/research/>

3. Job Description

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

Department: Physics and Astronomy

Section/Unit/School: School of Mathematical and Physical Sciences

Location: Physics and Astronomy, Falmer Campus, Brighton

Grade: Research Fellow I, Grade 7

Responsible to: Simon Peeters, Professor of Physics

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 Carry out research relating to the DUNE and NOvA experiments.
- 4.2 Develop the DUNE DAQ design.
- 4.3 Develop trigger strategies and determine their expected physics performance.
- 4.4 Develop and publish physics analyses using NOvA data as well as working on supporting tasks.

4.5 Present/discuss the group's activities at working group and collaboration meetings.

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. Expertise with complex computing systems for particle physics experiments or similar.

2. Ability to efficiently process and analyse large-scale experimental data.
3. Experience in the analysis of data from a particle physics experiment or similar.
4. Excellent C++/other language programming and IT skills
5. Commitment to learning new software skills when required, possibly by attending appropriate training.
6. High level of numerical and analytical skills.
7. Demonstrated initiative and creativity in developing an existing experimental programme.
8. Willing and able to travel to and spend time in the USA and to other locations in the UK and abroad, including for extended periods of time, as required.
9. Flexibility to work outside normal hours if required.
10. Willing and able to carry out work underground and in radiation protected zones if necessary.

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. Evidence of successful engagement in teaching and/or the supervision of students.
4. Experience with DAQ and/or trigger systems from a particle physics experiment or similar.
5. Detailed knowledge of liquid argon time projection chambers and/or other scintillator detectors.
6. Detailed knowledge of neutrino physics and analysis of data from neutrino oscillations experiments.