



1 Advertisement

Post Title: Research Fellow in Experimental Particle Physics – ATLAS Flavour Physics

School/department, School of Mathematical and Physical Sciences – Physics and Astronomy

Hours: full time or part time hours considered up to a maximum of 1FTE

Contract: fixed term until 30th of September 2025, with possibility of extension based on funds availability

Reference: 20411

Salary: starting at £37,099 to £44,263 per annum, pro rata if part time

Placed on: 10 August 2023

Closing date 15 September 2023. Applications must be received by midnight of the closing date.

Expected Interview date: to be confirmed

Expected start date: to be confirmed

The ATLAS/Experimental Particle Physics (EPP) group at Sussex is seeking to appoint a creative and talented scientist with a strong interest in data analysis and machine learning for particle physics applications. The position is to work primarily on the ATLAS experiment and its future upgrades. The appointment is for 28 months initially, with possibility of extension subject to funding.

The group has a strong and ever developing physics programme on ATLAS, with current focus on beyondthe-Standard-Model (BSM) searches, top quark physics and a strong leadership on heavy flavour physics. The main technical responsibilities on ATLAS are on the High-Level Trigger and on upgrades of the trigger system. Sussex is also part of the SouthGrid Tier-2, and group members have access to well resourced HPC infrastructure on campus.

The post focuses on the study of indirect new physics signatures related to Heavy Flavour Physics and Lepton Flavour Universality Violation in beauty and top quarks. The successful candidate will be supporting the ATLAS Sussex Flavour Physics activities in collaboration with its faculty members and in synergy with other PDRAs. The primary focus will be on the exploitation of ATLAS Run 3 data in Flavour Physics, applying – besides traditional analysis techniques - novel machine learning techniques and technologies. The work will involve the use of early Run 3 and existing Run 2 data while in parallel establishing – and exploring as much as possible - approaches extendable to HL-LHC and future colliders efforts.

Candidates are expected to hold, or be close to obtaining, a doctorate in experimental particle physics and to have a demonstrated track record of internationally recognised research at a large-scale collider experiment.

Please contact Professor Alessandro Cerri (a.cerri@sussex.ac.uk) and Professor Fabrizio Salvatore (p.f.salvatore@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.

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 the [Physics and Astronomy website](#) and on the [EPP group website](#)

3. Job Description

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

Department: Physics

Section/Unit/School: MPS

Location: Falmer campus - Brighton

Grade: Research Fellow I, 7

Responsible to: Line Manager through to Head of School

Responsible for: N/A

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 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.

4. Person Specification

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 Line Manager and/or Head of School.

4. Role-specific duties

- 4.1. To support and contribute to the data analysis activities of the Sussex ATLAS team in Flavour Physics.
- 4.2. To support the development of novel Flavour Physics analysis approaches in the search for indirect new physics signatures.
- 4.3. To assist in supervising and coordinating the research activity of undergraduate and postgraduate students.

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.
9. Willingness and ability to travel to CERN and to other locations in the UK and abroad, including for extended periods of time, as required.
10. Willingness and ability to undertake shift work, as required.
11. Willingness and ability to carry out a limited amount of work in radiation protected zones if necessary.

ESSENTIAL ROLE-SPECIFIC CRITERIA

1. Hold a PhD in Experimental Particle Physics or equivalent degree.
2. Substantial knowledge of data analysis techniques and algorithms in particle Physics.
3. Demonstrated experience in data analysis from a large-scale particle physics experiment.
4. Good knowledge and experience of programming (e.g. C++, python and analysis tools commonly used in HEP).
5. Commitment to learning new software and hardware skills when required, possibly attending the appropriate training.
6. A creative approach to problem-solving with a high-level analytic ability.

DESIRABLE ROLE-SPECIFIC CRITERIA

1. Experience in the analysis of LHC data.
2. Track record in operation and data collection from a large-scale particle physics experiment.
3. Familiarity with Flavour Physics and related phenomenology.
4. Experience with computing infrastructure and management in HEP.
5. Experience of Machine Learning techniques in HEP.
6. Experience in the analysis and TDAQ frameworks of the ATLAS experiment at the LHC.
7. Experience working in an international collaborative environment.

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.