THE UNIVERSITY OF MANCHESTER

PARTICULARS OF APPOINTMENT

FACULTY OF SCIENCE AND ENGINEERING

SCHOOL OF NATURAL SCIENCES

DEPARTMENT OF PHYSICS AND ASTRONOMY

RESEARCH ASSOCIATE IN PARTICLE PHYSICS ON ATLAS

VACANCY REF: SAE-032629

Salary:	£38,448 - £46,970 per annum depending on relevant experience
Hours:	Full time
Duration:	Fixed term from 1st January 2027 for an initial period of 36 months
Location:	Manchester

Enquiries about the vacancy, shortlisting and interviews:

Name: Prof Andrew Pilkington, Professor of Particle Physics and Head of Particle Physics

Email: andrew.pilkington@manchester.ac.uk

BACKGROUND

The Particle Physics group at the University of Manchester has a vacancy for a Postdoctoral Research Associate to work on the ATLAS experiment at the CERN LHC. The Manchester ATLAS group consists of seven academic members of staff, and around twelve research staff and 20 PhD students. The Manchester group has a strong involvement in many areas of ATLAS physics analysis, including studies of the Higgs boson's interactions, measurements of high-energy electroweak processes (VBS/VBF, multiboson production), top quark physics, and searches for new phenomena. The Manchester group is also heavily involved ATLAS detector operations and performance, with long-standing contributions to the ATLAS trigger and data acquisition system, jet and flavour tagging performance, and the Phase-II upgrade.

In addition to ATLAS, the wider Manchester particle physics group plays a major role in many international experiments at the Energy Frontier (FCC, FASER), in Flavour Physics (BES-III, g-2, Mu2e), in Neutrino Physics (DUNE, MicroBooNE, SBND, SuperNemo, NEXT), and in direct Dark Matter detection (DarkSide-50, DarkSide-20k). The theoretical side of the group has an

international reputation for its work on phenomenology at high-energy colliders, in Quantum Chromodynamics, neutrino and Higgs Physics, CP violation, and in the physics of the early Universe.

Overall Purpose of the Job

The post-holder will lead physics analyses using data from the ATLAS experiment and work in collaboration with theorists on phenomenological studies related to the ATLAS analyses. The physics analyses will focus on measurements of the joint polarisation of weak boson pairs that are produced via the vector boson scattering process and decay via the semileptonic channel. In addition, the post holder will contribute to developing and calibrating new jet reconstruction and tagging algorithms and there will be opportunities to contribute to the ATLAS Phase-II upgrade. The post-holder will provide guidance and technical support for our strong cohort of PhD students.

Key Responsibilities, Accountabilities or Duties

The exact programme of activities will be agreed in discussions with Prof Andrew Pilkington. The post holder will be expected to:

- Lead/perform physics analyses using data from the ATLAS experiment.
- Perform interpretations of the results and/or phenomenological studies of related theories.
- Contribute to technical activities at ATLAS (jet reconstruction and calibration)
- Provide guidance and technical support for the work of Manchester PhD students.
- Perform any other duties commensurate with the grade and position, as requested by Professor Andrew Pilkington
- Work at any location, as required, both within the University of Manchester and at CERN.
- Undertake any relevant training, as required.

PERSON SPECIFICATION

Essential knowledge:

- PhD or equivalent in particle physics or a closely related discipline.
- Experience with particle physics detector operations and data analysis.
- Knowledge of relevant computer languages such as C++ and Python.
- Experience of LINUX and/or UNIX operating systems.
- Ability to contribute to research papers in the field of particle physics.
- Ability to work collaboratively as a member of a team.
- Ability to communicate effectively with a range of audiences.
- Ability to present research findings at conferences and workshops.

Desirable Knowledge, Skills and Experience:

- Experience of working on a hadron-collider experiment.
- Experience in deploying machine-learning algorithms for particle physics analysis.
- Experience in jet reconstruction, tagging, and calibration techniques.
- Experience in statistical methods used to search for signatures of new physics.
- Experience in particle physics phenomenology.