Imperial College London

Job Title:	Research Associate in High Energy Physics
Department:	High Energy Physics Group, Department of Physics
Campus location:	South Kensington Campus with regular travel including throughout the United Kingdom, Europe and the United States of America
Job Family/Level:	Research Job Family, Research Associate* (Research salary scale)
Responsible to:	Professor Alexander Tapper
Key Working Relationships (internal):	Academic Staff, other Research Associates/Assistants, Engineers and Technical Staff, and Postgraduate Students
Key Working Relationships (external):	Members of the DUNE collaboration
Contract type:	Full-time, Fixed-term post for two years in the first instance

Purpose of the Post

To contribute to the Deep Underground Neutrino Experiment (DUNE), the next generation accelerator-based long baseline neutrino experiment that will be sited at the Fermi National Accelerator Laboratory and the Sanford Underground Research Facility (SURF) in the USA. The research programme will be focussed on development of the DUNE far detectors, in particular control, configuration, and monitoring software for liquid argon detector data acquisition systems. The research programme will be conducted in the Blackett Laboratory at Imperial College, at Fermilab and SURF, at CERN, and at collaborating UK institutes.

To fully engage in the research activities of the Group by working together with postgraduate students, other research associates and academics.

Key Responsibilities

Main duties

- To take a leading role in developing the data acquisition systems for the DUNE detectors
- To contribute to the control, configuration, and monitoring software for the DUNE detector data acquisition systems
- To work closely with experts at Imperial and at partner institutions including those in the UK, Europe and in the USA
- To participate in operations (shifts) at ProtoDUNE at CERN or elsewhere as appropriate
- To participate in other DUNE activities, optionally, for around 20% of working time
- To take initiatives in the planning of high-impact research
- To direct the work of small research teams including undergraduate and postgraduate students
- To design and supervise the construction of a cold atom apparatus
- To identify and develop suitable techniques, and apparatus, for the collection and analysis of data
- To ensure the validity and reliability of data at all times
- To maintain accurate and complete records of all findings
- To write reports for submission to research sponsors
- To prepare material for presentation in oral and poster formats
- To present findings to colleagues and at workshops and conferences
- To draft publications and prepare them for submission to refereed journals

- To submit publications to refereed journals
- To contribute to writing bids for research grants
- To provide guidance to staff and students
- To undertake instruction of PhD and MSc students as agreed
- To supervise practical work and advise students on research techniques
- To take responsibility for organising resources and effective decision making in support of research
- To develop contacts and research collaborations within the College and the wider community
- To promote the reputation of the Group, the Department and the College
- To contribute to the smooth running of the Group's laboratories and, facilities with other scientists, technicians and students within the laboratories
- To comply with the College, Department, and Group safety practices and to attend courses on safety when appropriate
- To take on any other duties as may be deemed reasonable by their Line Manager, Head of Group or Head of Department

- **Other Duties**
- To undertake any necessary training and/or development
- To undertake appropriate administration tasks
- To attend relevant meetings
- To participate in the outreach activities of the Group
- To voluntarily undertake limited teaching duties in joint agreement with the Department of Physics

Where Imperial or funder conditions necessitate, you will be required to complete timesheets for your work on projects in a timely manner.

*Candidates who have completed but not yet been officially awarded their PhD will be appointed as a Research Assistant within the salary range £40,694 - £43,888 per annum

Person Specification

Requirements Candidates/post holders will be expected to demonstrate the following	**Essential (E)/ Desirable (D)**
Education	
• Research Associate: Hold a PhD (or equivalent) in Physics	E
• Research Assistant: Near completion of a PhD (or equivalent) in Physics or hold Masters Degree in Computer Science (or equivalent)	E
Knowledge & Experience	
• Experience of software development and use, particularly C++ and python	E
• A strong record of contributions to a major software project and/or experimental particle physics project	E
• Demonstrated ability of planning work of a small team, or developers or scientists, of varied expertise, defining milestones and ensuring results are achieved	E
• Experience in taking initiative and/or developing own ideas independently	E
• Flexibility to adapt to an evolving environment and to work in teams, both as the leader or as a member	E
• Experience with design and development of distributed computing systems, in particular service-oriented architectures	D
• Experience with design and development of control and monitoring of applications distributed over multiple processes and multiple hosts	D
• Experience with agile development techniques and continuous integration processes	D
• Experience with development of Graphical User Interfaces	D
• Experience of working on the design or construction of HEP detector systems	D
• Experience of working in the environment of a large international science collaboration	D
• **Skills & Abilities**	
• Ability to conduct a detailed review of recent literature	E
• Ability to develop and apply new concepts	E
• Excellent verbal communication skills and the ability to deal with a wide range of people	E
• Excellent written communication skills and the ability to write clearly and succinctly for publication	E
• Ability to organise own work with minimal supervision	E
• Ability to prioritise own work in response to deadlines	E
• Ability to direct the work of a small research team and motivate others to produce a high standard of work	E
• **Other Requirements**	
• Willingness to work as part of a team and to be open-minded and cooperative	E
• Flexible attitude towards work	E
• Discipline and regard for confidentiality and security at all times	E
• Willingness to undertake any necessary training for the role	E
• Willingness to travel both within the United Kingdom and abroad to conduct research and attend conferences/workshops and other meetings	E

Further Information

Please note that job descriptions cannot be exhaustive, and the post-holder may be required to undertake other duties, which are broadly in line with the above key responsibilities.

Imperial College is committed to equality of opportunity and to eliminating discrimination. All employees are expected to follow the Imperial Values & Behaviours framework. Our values are:

- Respect
- Collaboration
- Excellence
- Integrity
- Innovation

Employees are also required to comply with all College policies and regulations paying special attention to: Confidentiality, Conflict of Interest, Data Protection, Equal Opportunities, Financial Regulations, Health and Safety, Information Technology, Smoking, Private Engagements and Register of Interests. They must also undertake specific training and assume responsibility for safety relevant to specific roles, as set out on the College Website Health and Safety Structure and Responsibilities page.

The College is a proud signatory to the San-Francisco Declaration on Research Assessment (DORA), which means that in hiring and promotion decisions, we evaluate applicants on the quality of their work, not the journal impact factor where it is published. For more information, see https://www.imperial.ac.uk/research-and-innovation/about-imperial-research/research-evaluation/

The College believes that the use of animals in research is vital to improve human and animal health and welfare. Animals may only be used in research programmes which are ultimately aimed towards finding new treatments and making scientific and medical advances, and where there are no satisfactory or reasonably practical alternatives to their use. Imperial is committed to ensuring that, in cases where this research is deemed essential, all animals in the College's care are treated with full respect, and that all staff involved with this work show due consideration at every level. Find out more about animal research at Imperial.

We are committed to equality of opportunity, to eliminating discrimination and to creating an inclusive working environment for all. We therefore encourage candidates to apply irrespective of age, disability, marriage or civil partnership status, pregnancy or maternity, race, religion and belief, gender identity, sex, or sexual orientation. We are an Athena SWAN Silver Award winner, a Disability Confident Leader and a Stonewall Diversity Champion.

The Department of Physics is also an IoP JUNO Practitioner and an Athena Silver SWAN Award winner. Further information about the Department's EDI work can be found at https://www.imperial.ac.uk/physics/about/equality-diversity-and-inclusion/.

July 2023