



TECHNICIAN IN PHYSICS (DETECTOR CONSTRUCTION)

Grade and salary: Grade 5 £29,588 – £33,951 pa or Grade 6 £33,951 – £38,784 pa

Working hours: Full time

Tenure: Fixed Term until 31 December 2027

Location: Liverpool campus

Faculty: Science and Engineering, School of Physical Sciences, Department of Physics

Recruiting department contact: Email: spshe@liverpool.ac.uk

Job ref: 117893

The Role

Role overview and University context:

The Department of Physics at the University of Liverpool is one of the worldwide construction sites for the upgrade of the Inner Tracker (ITk) for the high-luminosity upgrade of the ATLAS experiment at CERN's Large Hadron Collider. The ITk upgrade is a new detector for measuring the momentum and origin of charged particles emanating from the proton-proton collisions in the centre of the experiment.

You will be based in the Liverpool Semi-conductor Detector Centre cleanroom and/or Advanced Material Laboratory complex within the Department of Physics at Liverpool. You will join a team of 15 physicists and engineers working together on the manufacture and quality-control testing of mechanical and electrical elements for the endcap pixel tracker and the barrel strip tracker. You will participate in the precision mechanical assembly of the carbon fibre structures and gluing of components to form modules. You are required to follow written instructions reliably and to enter data into the construction database. You will have to use computer-controlled metrology equipment for geometrical quality control of manufactured components. You will have to monitor and report yields, machine problems and the usage of consumables. You will be expected to attend technical meetings at Liverpool and occasionally off-site as the project proceeds.

This role requires the highest standard of cleanroom working and mechanical assembly disciplines to be applied. You will be required to work from formal engineering drawings and specifications including tolerancing. Good sensory and physical co-ordination is essential given the small scale and delicate nature of the detectors. Past experience of working in a clean room environment, working with carbon fibre and geometrical quality control are highly desirable. You will have good communication skills and the ability to instruct others (e.g. students) in the production procedures.

Key responsibilities and duties:

- The precision assembly of carbon fibre support structures for the pixel and strip detector.
- Accurate metrology of tooling and structures using CMM and photogrammetry systems.
- Perform the precision gluing of components to form silicon modules and follow the written instructions reliably and to enter data into the construction database.
- Monitor and report yields, machine problems and the usage of consumables.
- Attend technical meetings at Liverpool and occasionally off-site as the project proceeds.

The School of Physical Sciences is working to create an inclusive environment which values a diverse workforce, and we recognise that many individuals value flexibility in their work/life balance. We particularly welcome applications from groups that are currently under-represented within the School of Physical Sciences. As an Athena Swan Silver Award holder, we are committed to gender equality. As an institution awarded the Race Equality Charter Bronze Award, we are dedicated to enhancing the representation, advancement, and achievement of minority ethnic staff members. The Department of Physics is a practitioner for the Institute of Physics Project. Additional resources on staff networks and EDI initiatives can be found here: <https://www.liverpool.ac.uk/hr/diversityandequality/>

Manual Handling

The post involves bending, stretching and the manual handling of loads up to 15kg. A system to control the risks is in place. The appointee will be required to complete a health questionnaire. Appointment will be subject to Occupational Health screening.

In addition to the above, all University of Liverpool staff are required to:

- Adhere to all University policies and procedures, completing all obligatory training and induction modules, including Equality & Diversity and Health & Safety.
- Support the University's vision to drive forward environmental and social equity through delivery of our [Sustainability Strategy](#) and associated action plans.
- Demonstrate customer service excellence and continuous improvement in engaging with all stakeholders.
- Respect confidentiality: all confidential information should be kept in confidence and not released to unauthorised persons.
- Participate in the University's Professional Development Review scheme and take a proactive approach to own professional development.
- Embody and uphold the University's Vision and Values.
- Demonstrate flexibility in on-campus-presence to enable participation in business-critical activities, including reasonable participation in such things as: open days, invigilation, welcome week activities, confirmation and clearing and financial year-end activities.

About you

Experience

Essential

1. Experience in a technical role within an electrical or mechanical scientific or engineering setting.
2. Experience of working to health and safety regulations and legal requirements.
3. Experience of carbon fibre production and assembly work (Grade 6 only).
4. Experience of assembling carbon fibre structures to high precision (Grade 6 only).
5. Experience of using touch-probe CMM systems.

Desirable

6. Experience of mould preparation, hand layup and secondary operations on carbon fibre laminates.
7. Experience in programming touch-probe CMM systems (Grade 6).
8. Experience of working in a clean room.
9. Experience of working within a production environment.
10. Experienced in planning and organising the work of others, managing small projects and resources to meet objectives. (Grade 6 only).

Education, qualifications and training

Essential

1. Completion of an apprenticeship in a relevant engineering subject, BTEC Higher (or equivalent) in Mechanical Engineering or relevant professional experience in a mechanical technical position.

Desirable

1. Higher level qualifications in an engineering or science-based discipline or several years' employment in a relevant technical role.
2. Five GCSEs (A-C or equivalent) including English, Mathematics and Science.
3. A-level or NVQ3 (or equivalent).

Skills, general and specialist Knowledge

Essential

1. Relevant experience of and extensive knowledge of precision assembly. (Grade 6)
2. Manual dexterity and an aptitude for repeated fine detailed work.
3. Ability to understand and work from technical or engineering drawings, sketches and verbal instruction.
4. Skilled at programming CMM machines for geometrical metrology and/or using photogrammetry software (Grade 6 only).
5. Skilled in the layup, production and post-machining of carbon fibre laminates (Grade 6 only).

Desirable

1. Good understanding of wire-bonding processes and determination of optimum settings (Grade 6).
2. Additional skills relevant to a clean-room environment.
3. Ability to create engineering drawings and procedures. (Grade 6).
4. Relevant experience of and extensive knowledge of precision assembly.

Personal attributes

Essential

1. Ability to communicate across all levels e.g. research students, senior technical staff, senior academics, external suppliers.
2. Able to convey and understand communication of a technical nature which would not be immediately understood by non-specialists (Grade 6).
3. Ability to work in a team.
4. Ability to work to targets and meet deadlines.
5. Comfortable working in clean room environment.
6. Ability to take initiative and solve problems on a day-to-day basis.
7. Willingness to maintain and improve skill set.

Desirable

1. Willingness to travel in the UK and abroad.
2. Willingness to undertake limited shift-work.
3. Demonstrated ability to lead a team (Grade 6).
4. Confidence in reporting progress and issues to local and project experts.

About us

Established in 1881, we are an internationally renowned Russell Group university recognised for our high-quality teaching and research. We are consistently ranked as one of the best [universities](#) both nationally and globally, and the majority of our research is rated world leading or internationally excellent. [Find out more about us.](#)

Why Work Here

We recognise, appreciate and celebrate the incredible work our staff do every day. As well as generous terms and conditions, we offer a range of enviable benefits and provide support for colleague's wellbeing and development. Discover more [about working here.](#)

Moving from abroad

As a global institute, we welcome applicants from all nationalities, moving from a different country can be challenging and we would like to help as much as we can, we have put together some information on eligibility to work documentation, accommodation, schools, healthcare, life in Liverpool and the UK as well as other practical information. Discover more about [moving from abroad.](#)

Our Staff

Whether it be their friendly colleagues, supportive managers or our outstanding facilities, our staff can explain better than anyone what it is like to work for us and why they enjoy their role. See what our [colleagues have to say.](#)

How to Apply

Application process

Our e-recruitment system enables you to register for an online account, where you can view, copy and edit your applications. Set up your account on our [Vacancies Portal.](#)

Once you submit your application you will receive an automatic email acknowledgment. You can view your application at any time by clicking into the application history section of your account.

The recruiting department will endeavour to respond to each application. However, if you have not heard within six weeks of the closing date, please take it that your application has not been successful on this occasion.

Job description

After the closing date this job description will be removed from our website. Should you wish to refer to this information at a later date please ensure you save a copy of this document.

Right to work

We have a legal responsibility to ensure that you have the right to work in the UK before you can start working for us. If you do not have the right to work in the UK already, any offer of employment will be conditional upon you gaining it. If the role is based outside the UK, you will need to demonstrate your right to work for the country in which you are to be based.

Disabilities and alternative formats

If you have any other requirements which will help you access the application or interview process or employment opportunities at the University, or if you require copies documentation in alternative formats, please email: jobs@liverpool.ac.uk or telephone 0151 794 6771.

