Detector Assembly Technical Officer: ATLAS-ITk Silicon Detector Modules

POSITION NO 0060670

CLASSIFICATION UOM 6

SALARY $92,749 - $100,397 p.a.

SUPERANNUATION Employer contribution of 17%

WORKING HOURS Full-time (1.0 FTE)

BASIS OF EMPLOYMENT Fixed term for up to 2 years

OTHER BENEFITS https://about.unimelb.edu.au/careers/staff-benefits

HOW TO APPLY Online applications are preferred. Go to http://about.unimelb.edu.au/careers, select the relevant option (‘Current Opportunities’ or ‘Jobs available to current staff’), then find the position by title or number.

CONTACT FOR ENQUIRIES ONLY
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Please do not send your application to this contact

For information about working for the University of Melbourne, visit our website: about.unimelb.edu.au/careers
Acknowledgement of Country

The University of Melbourne acknowledges the Traditional Owners of the unceded land on which we work, learn and live: the Wurundjeri Woi Wurrung and Bunurong peoples (Burnley, Fishermans Bend, Parkville, Southbank and Werribee campuses), the Yorta Yorta Nation (Dookie and Shepparton campuses), and the Dja Dja Wurrung people (Creswick campus).

The University also acknowledges and is grateful to the Traditional Owners, Elders and Knowledge Holders of all Indigenous nations and clans who have been instrumental in our reconciliation journey.

We recognise the unique place held by Aboriginal and Torres Strait Islander peoples as the original owners and custodians of the lands and waterways across the Australian continent, with histories of continuous connection dating back more than 60,000 years. We also acknowledge their enduring cultural practices of caring for Country.

We pay respect to Elders past, present and future, and acknowledge the importance of Indigenous knowledge in the Academy. As a community of researchers, teachers, professional staff, and students we are privileged to work and learn every day with Indigenous colleagues and partners.

Position Summary

The University of Melbourne Experimental Particle Physics (EPP) group is a member of the major ATLAS experiment being undertaken at the international high energy physics laboratory CERN, Geneva, Switzerland. Part of Australia’s responsibility in membership of the ATLAS Collaboration is the production and testing of high-precision silicon strip detectors for the upgraded inner tracker, ITk, part of the major ATLAS upgrade currently underway. The University of Melbourne with decades of experience in assembling precision detectors has the responsibility for producing several hundred detector modules over the coming years. The Technical Officer role will include precision gluing, measurement of the dimensional fidelity of assembled modules, the operation of a Hesse and Knipps wire bonder to connect the many thousands of channels of custom ASIC electronics to individual channels of silicon microstrip sensors, all in a clean-room environment. The Technical Office will work under the supervision of the Project Leader, Professor Geoffrey Taylor. The position will be located in the School of Physics, the University of Melbourne.

1. Key Responsibilities

- Oversight of all detector assembly clean-room activities.
- Carrying out necessary procedures such acceptance tests of components received from overseas collaborators, as well as other quality control and assurance processes during detector module assembly.
- The key technical responsibilities will be in the detector module assembly including:
  - Precision gluing using a glue robot and dispenser of flexible Kapton electronic hybrid circuits to silicon microstrip sensors, and of flexible “power board” hybrids.
  - Measurement, reporting, and database entry of the results.
o Wire bonding of Kapton foil electronic hybrids and power boards followed by electrical testing and reporting.

o Wire bonding of ASIC chips (mounted on the hybrid circuits) to the silicon sensors.

o Testing, both in the wire bonding process and post-bonding the assembled modules, followed by reporting and database entry of the results.

o Packing and shipping of accepted modules to the University of Adelaide for thermal cycling before shipment to Europe for assembly onto the ITk support structures.

- Work to specifications and procedures as required by the ATLAS/ITk Collaboration, as adapted to local conditions, and updated from time-to-time.

- Monitoring the status of the detector clean room, drawing attention to maintenance issues as they arise, as well as keeping track the necessary level of appropriate consumables used in the assembly production.

- Ensure an up-to-date record of University compliance courses, such as, but not limited to, Appropriate Workplace Behaviours, OH&S training courses, as required.

- Occupational Health and Safety (OH&S) and Environmental Health and Safety (EH&S) responsibilities as outlined in section 5.

2. Selection Criteria

2.1 ESSENTIAL

- A demonstrated capacity to work with laboratory instruments and precision equipment.

- A demonstrated dexterity in fine assembly processes.

- A demonstrated capacity to learn to use unfamiliar equipment such as the glue robot, coordinate measuring machine (CMM) and wire bonder.

- A demonstrated capacity to work carefully with delicate equipment and devices.

- Some experience with reporting measurement results and storing information in a database.

- Capacity to work with research students from various backgrounds.

2.2 DESIRABLE

- Experience with fine assembly equipment.

- Experience with assembly and handling of delicate devices.

- Experience in working within clean rooms.

- Experience in working in a university environment.

- Experience with data entry into a database.
2.3 OTHER JOB RELATED INFORMATION

This position requires the incumbent to obtain and hold a current and valid Working with Children Check.

3. Job Complexity, Skills, Knowledge

3.1 LEVEL OF SUPERVISION / INDEPENDENCE

The Technical Officer will need to be trained in the specifics of the ITk detector module assembly, test, and measurement.

The technical will work under the supervision of Professor Taylor, but with the expectation of growing independence in the module production as the required quality of the assembled modules becomes reliably achieved.

3.2 PROBLEM SOLVING

The technical officer will be expected to identify problems or issues with the assembly procedures, and to provide suggestions for continual improvement to reliability and efficiency in the module production.

3.3 PROFESSIONAL AND ORGANISATIONAL KNOWLEDGE

The incumbent is expected to learn the organisational structure, workplace culture and protocols, strategic objectives and policies of the University and how this relates to the Experimental Particle Physics group activities.

The position requires current detailed knowledge of the University Compliance Program and computer systems.

3.4 RESOURCE MANAGEMENT

The Technical Officer will be expected to take responsibility for identifying maintenance issues, and for keeping an inventory of consumables to avoid delays in production.

3.5 BREADTH OF THE POSITION

The technical Officer will need to become expert in all the critical aspects of ITk module production.

4. Equal Opportunity, Diversity and Inclusion

The University is an equal opportunity employer and is committed to providing a workplace free from all forms of unlawful discrimination, harassment, bullying, vilification and victimisation. The University makes decisions on employment, promotion, and reward on the basis of merit.

The University is committed to all aspects of equal opportunity, diversity and inclusion in the workplace and to providing all staff, students, contractors, honorary appointees, volunteers and visitors with a safe, respectful and rewarding environment free from all
forms of unlawful discrimination, harassment, vilification and victimisation. This commitment is set out in the Advancing Melbourne strategy that addresses diversity and inclusion, equal employment opportunity, discrimination, sexual harassment, bullying and appropriate workplace behaviour. All staff are required to comply with all University policies.

The University values diversity because we recognise that the differences in our people’s age, race, ethnicity, culture, gender, nationality, sexual orientation, physical ability and background bring richness to our work environment. Consequently, the People Strategy sets out the strategic aim to drive diversity and inclusion across the University to create an environment where the compounding benefits of a diverse workforce are recognised as vital in our continuous desire to strive for excellence and reach the targets of Advancing Melbourne.

5. Occupational Health and Safety (OHS)

All staff are required to take reasonable care for their own health and safety and that of other personnel who may be affected by their conduct.

OHS responsibilities applicable to positions are published at:
https://safety.unimelb.edu.au/people/community/responsibilities-of-personnel

These include general staff responsibilities and those additional responsibilities that apply for Managers and Supervisors and other Personnel.

6. Other Information

6.1 SCHOOL OF PHYSICS

www.physics.unimelb.edu.au/

The University of Melbourne’s School of Physics is one of Australia’s leading Physics Schools. It has achieved this status through the high quality of its research and teaching programs. The School offers a wide range of physics subjects to undergraduate and postgraduate students, and performs research in the following areas: Astrophysics, Atomic, Molecular and Optical Physics, Experimental Condensed Matter Physics, Experimental Particle Physics, Materials Science, Physical Biosciences, Theoretical Condensed Matter Physics and Theoretical Particle Physics.

The School of Physics hosts the following ARC Centre of Excellence groups:

- ARC Centre of Excellence for Transformative Meta-Optical Systems (TMOS)
- ARC Centre of Excellence for Dark Matter Particle Physics
- ARC Centre of Excellence for Gravitational Wave Discovery
- ARC Centre of Excellence in All Sky Astrophysics in 3 Dimensions
- ARC Centre of Excellence for Quantum Computation and Communication Technology (CQC²T)

The School also plays a major role in the Australian Synchrotron research program, and in the development of the Stawell Underground Physics Laboratory.
Currently some 30 academics, 51 research-only staff, more than 95 postgraduate students and 72 associates supported by 23 professional staff make up the School of Physics. The School additionally hosts 1 Thomas Baker Chair and Melbourne Laureate Professor, 2 ARC Future Fellows and 1 ARC Discovery Early Career Researcher. Skilled technical staff operate, maintain and develop complex instrumentation and equipment to support the teaching and research activities of the School. The School is located in the David Caro building on the Swanston Street boundary of the University campus. The Head of School and majority of the Professional staff are housed on the ground floor of the building to act as the first point of contact for students, staff and visitors.

6.2 FACULTY OF SCIENCE

http://www.science.unimelb.edu.au

Science at the University of Melbourne is among the most highly ranked Faculties of Science in Australia*. Science is defined by its research excellence in the physical and life sciences and is at the forefront of research addressing major societal issues from climate change to disease. Our discoveries help build an understanding of the world around us.

We have over 150 years of experience in pioneering scientific thinking and analysis, leading to outstanding teaching and learning and offer a curriculum based on highly relevant research, which empowers our STEM students and graduates to understand and address complexities that impact real world issues and the challenges of tomorrow.

We aspire to engage the broader community with the impact that Science has on our everyday lives. Through the strength of our internships and research project offerings, our students are provided opportunities to engage with industry partners to solve real-world issues.

The Faculty of Science has over 50,000 alumni and is one of the largest faculties in the University comprising six schools: BioSciences, Chemistry, Ecosystem and Forest Sciences, Mathematics and Statistics, Physics and the School of Geography, Earth and Atmospheric Sciences.

The Faculty is custodian of the Bio21 Molecular Science and Biotechnology Institute, the Indigenous Knowledge Institute, the Melbourne Energy Institute, the Office for Environmental Programs and home to numerous Centres.

Science manages more than $301 million of income per annum, with a staff base in the order of 250 FTE professional staff, and more than 662 FTE academic staff.

We offer a range of undergraduate, honours, graduate and research degrees; enrolling over 10,800 undergraduate and 2,500 graduate students. The Faculty of Science is the custodial Faculty for the BSc (Bachelor of Science). The Faculty of Science is highly research focussed, performing strongly in the Australian Research Council competitive grants schemes. The Faculty of Science is currently growing its competitiveness and standing in the National Health and Medical Research Council and health space.

The Faculty of Science provides community services and industry partnerships based on a solid foundation of research in the pure and applied sciences. The Faculty has an endowment of approximately $100 million. The annual income from the endowment supports more than 140 prizes, scholarships, research awards, and numerous academic positions.

6.3 THE UNIVERSITY OF MELBOURNE
Established in 1853, the University of Melbourne is a leading international university with a tradition of excellence in teaching and research. The main campus in Parkville is recognised as the hub of Australia’s premier knowledge precinct comprising eight hospitals, many leading research institutes and a wide-range of knowledge-based industries. With outstanding performance in international rankings, the University is at the forefront of higher education in the Asia-Pacific region and the world.

The University employs people of outstanding calibre and offers a unique environment where staff are valued and rewarded.

Further information about working at The University of Melbourne is available at http://about.unimelb.edu.au/careers

6.4 ADVANCING MELBOURNE

The University’s strategic direction is grounded in its purpose. While its expression may change, our purpose is enduring: to benefit society through the transformative impact of education and research. Together, the vision and purpose inform the focus and scale of our aspirations for the coming decade.

Advancing Melbourne reflects the University’s commitment to its people, its place, and its partners. Our aspiration for 2030 is to be known as a world-leading and globally connected Australian university, with our students at the heart of everything we do.

- We will offer students a distinctive and outstanding education and experience, preparing them for success as leaders, change agents and global citizens.
- We will be recognised locally and globally for our leadership on matters of national and global importance, through outstanding research and scholarship and a commitment to collaboration.
- We will be empowered by our sense of place and connections with communities. We will take opportunities to advance both the University and the City of Melbourne in close collaboration and synergy.
- We will deliver this through building a brilliant, diverse and vibrant University community, with strong connections to those we serve.

The means for achieving these goals include the development of the University of Melbourne’s academic and professional staff and the capabilities needed to support a modern, world-class university. Those means require a commitment to ongoing financial sustainability and an ambitious infrastructure program which will reshape the campus and our contribution to the communities we engage with. This strategy, and the priorities proposed, is centred around five intersecting themes; place, community, education, discovery and global.

6.5 GOVERNANCE

The Vice Chancellor is the Chief Executive Officer of the University and responsible to Council for the good management of the University.

Comprehensive information about the University of Melbourne and its governance structure is available at https://about.unimelb.edu.au/strategy/governance