


Postgraduate Research Special : Open Day 27/11/2025, 17:00

Department of Physics Newsletter

"Welcome to our Postgraduate Opportunities Event! Our department is committed to providing all our students the opportunity to realise their maximum potential as physicists. I hope that you enjoy both the event and reading this special Newsletter. For more information about our Department please visit our website or get in touch with me at any time!"

Prof Tim Veal, *Head of Department*



World-leading Research

Our research is carried out across research clusters, **Accelerator Science**, **Condensed Matter**, **Nuclear Physics**, **Particle Physics**, underpinned by continuous enhancements in **Physics Education** and transversal activities and work on cutting edge technologies in fields such as **artificial intelligence**, renewable energy and **sustainable technologies**, innovative materials, semiconductor and **quantum** sensors, and **medical physics**. Through a programme of **exploration** and **discovery**, we are addressing the most fundamental questions in physics. Our staff contribute to – and often lead – experiments in Liverpool and at international laboratories like CERN, Fermilab, and ESRF. As a PhD student, you will be a crucial part in this work.

The most recent Research Excellence Framework assessment (in 2021) placed us amongst the **UK's top 10 physics departments** for our research outputs and the quality of our research environment.

Prof Monica D'Onofrio, *Head of Research*



What it's like being a PhD student

Apply for one of **our fully funded PhD positions** to join a research community of more than 100 PhD students!

As a PhD student you will learn how to perform research both independently and as a part of a research group. You may work for large or small international collaborations, and you may have opportunities to take long-term attachments in overseas laboratories like CERN. During year 1, you will attend both subject specific and wider skill training. You will have the chance to attend seminars, go to schools and conferences and participate in undergraduate teaching. Within 4 years, you will have to submit a thesis for examination.

For general inquiries about our PhD programme please contact our Postgraduate Research Director, [Dr Nikos Rompotis](#)

Join our Postgraduate Open Day to learn more!

**Thursday 27 November 2025,
17:00, Leo Carrol Suite and online**





Images courtesy of: Liverpool Semiconductor Detector Centre | ALICE at CERN | XMaS based at ESRF | Department of Physics

PhD applications and funding

To apply for a PhD, it is usually expected that you have a MPhys with a 1st or 2:1 or an MSC.

We have **several fully funded PhD positions**, covering both fees and stipend for usually 3.5 years. Our main funders are STFC and EPSRC.

Our research Clusters



Accelerator Physics



Accelerator physics at Liverpool carries out world-class research with particle accelerators and drives innovation in technologies that help boost the performance of accelerator-based research infrastructures. Our research is realized in close collaboration with our national and international partners, enhanced by the unique facilities at Daresbury Laboratory and the Cockcroft Institute, as well as our collaboration partners from around the world.

Our research activities include:

Antimatter research: investigating fundamental symmetries and interactions.

Frontier accelerators: collaborating with global research groups to design, build, and optimize world-class research infrastructures such as the LHC at CERN and its upgrade programmes, contributing expertise in beam instrumentation, accelerator design, and optimisation.

Novel accelerators: including plasma wakefield accelerators and ultra-compact accelerators-on-a-chip.

Accelerator applications: R&D into healthcare technologies and applies Data Science techniques to real-world challenges.

For more information, contact [Dr Hao Zhang](mailto:Dr.Hao.Zhang@liverpool.ac.uk) or visit

liverpool.ac.uk/quasar/ liverpool.ac.uk/physics/research/accelerator-physics/



Condensed Matter Physics



CMP at Liverpool embraces a wide range of physics that is aimed at making a positive impact on life, technology and innovation by developing both fundamental and applied understanding relevant to modern issues. 17 academics, 15 professional research staff and research associates, and 20 PhD students work in our five research themes:

Advanced Characterisation utilises X-rays (both at the XMas beamline at Grenoble and in house) for X-ray diffraction, resonant X-ray scattering, grazing incidence measurements, spectroscopy and small angle scattering.

Advanced Materials includes research on Bio - and soft matter-printing, magnetic materials and structures, and quasicrystals and quasiperiodic media.

Chemical and Electrochemical Physics studies chemical physics of reaction dynamics as well as electrochemical interfaces.

Imaging and Medical Diagnostics use IR imaging in near and far-field to study biological specimens (particularly cancer biopsies).

Solar Energy Conversion research prepares and investigates new materials for both solar hydrogen and electricity production (solar cells).

For more information contact [Dr Frank Jaeckel](mailto:Dr.Frank.Jaeckel@liverpool.ac.uk) or visit liverpool.ac.uk/physics/research/condensed-matter-physics/





Nuclear Physics



Nuclear Physics at Liverpool encompasses many areas of research that range from enhancing fundamental understanding of the laws of physics by driving it to the extremes, to creating a positive impact on present issues such as medical treatment and preservation of the environment.

Our fundamental science aims to understand how nuclei can support the highest values of angular momentum; how single-particle and collective structure of nuclei evolve near the drip lines; the phenomenon of reflection asymmetry and shape coexistence in nuclei; the behaviour of the heaviest nuclei; and the phase equilibria of hadronic matter at extreme energy densities.

We perform our research at accelerator laboratories around the world, including those in Canada, Finland, Germany, Italy, Switzerland (CERN) and the USA. In many cases it exploits instrumentation that we have developed, such as [AGATA](#), [ALICE](#) and the [ISOLDE Solenoidal Spectrometer](#). This expertise in developing novel instrumentation underpins our applied research through projects like [SIGMA](#) and [GRI+](#).

For more information contact [Prof Robert Page](#) or visit liverpool.ac.uk/nuclear-physics



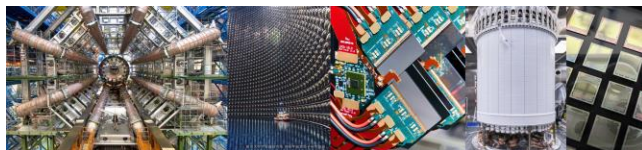
Physics Education

The Physics Education cluster studies how students learn physics and how teaching practices affect outcomes. Comprising 2 academic staff and 2 PhD students, current research focuses on using machine learning to analyse socio-demographic disparities in degree outcomes, exploring AI's role in education, examining how institutional culture and psychology shape student identity and belonging, and developing inclusive public engagement experiences.

For more information contact [Dr Chris Edmonds](#) or visit liverpool.ac.uk/physics/research/physics-education-research/



Particle Physics



Our particle physics cluster is one of the largest in the UK and we conduct research into a wide range of phenomena at facilities across the globe, including CERN, Fermilab, JPARC, Sandford, Kamioka and PSI. We specialise in physics analysis and the development and delivery of detectors. Our 23 academics, 64 research staff, and 37 PhD students work across areas including: The **ATLAS** experiment at the LHC played a leading role in the discover of the Higgs boson. We now deepen our understanding of the Higgs, search for new physics and develop detectors for the HL-LHC. This is complemented by the **FASER** experiment. **LHCb** studies the behaviour of B mesons and develops future trackers. We study **Neutrino** oscillations at **T2K**, **Hyper-Kamiokande**, **SBND** and **DUNE**, and search for neutrinoless double beta decay with **LEGEND**. Our direct **Dark Matter** searches include **LZ** and **Darkside**, and applications of quantum technologies at **Magis** and **AION**. We make precision measurements of **Muon** properties like **g-2** and search for rare decays at **Mu2e** and **Mu3e**. Our research is underpinned by our long-standing expertise in development of new detectors including next generation silicon detectors and liquid argon time projection chambers.

For more information contact [Prof Neil McCauley](#) or visit liverpool.ac.uk/physics/research/particle-physics/



From our current PhD students

Sinead Eley (Particle Physics, LIV.INNO)

"I've just completed my second year of my PhD working on dark sector searches with the FASER detector. Having completed my undergraduate degree at Liverpool, I felt comfortable here and knew it was somewhere that I would be supported during my PhD. We have a strong community feeling here where everyone is

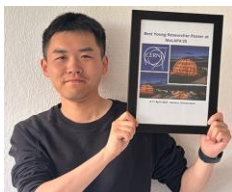


welcoming and happy to have a chat. There have been countless opportunities; one that stands out is WONDRS, a conference specifically for gender minorities in STEM, this really helped to address the imposter syndrome many of us face as researchers."

More from our current PhD students

Qiyuan Xu (Accelerator Science)

"I am from China, previously a XJTLU student and currently a third-year PhD student in Accelerator Science. My research focuses on applying machine learning in beam diagnostics specifically develop a radiation-tolerant, remote beam imaging system. The department offers a very friendly and diverse environment with strong research support. I have had the opportunity to work at CERN and participate in international conferences and events with students and researchers from around the world. Overall, it has been a fantastic and truly enjoyable journey."



Baltazar Guedes (Condensed Matter)

"I am a third-year condensed matter physics PhD student, working with in-situ x-ray and electrochemical characterisation of materials, to obtain information on the structure changes of electrodes and electrolytes in electrochemical environments. Having spent my under-graduate years at the university and continuing with my PhD, both the university and city have been a friendly and welcoming place that I am more than happy to be working at. The department is very diverse and there is always something exciting to discuss with peers. Collaborations across the university enable to do research in ways we have never expected!"



Equality, Diversity and Inclusion

We are committed to equality, diversity, and inclusion (EDI). Our department is a JUNO practitioner (the IOP's flagship gender equality award) and we hold an Athena Swan silver award. The university has a Race Equality Charter bronze award and is part of Disability Confident and Stonewall Diversity Champions.

EDI in our department is led by staff and student champions. Recent activities include pursuing the IOP inclusion award and hosting the Conference for Undergraduate Women and Non-Binary Physicists. Postgraduate students play a crucial role in EDI as members of the EDI champions and in 2024 developed and delivered the first annual Woman and Non-binary Doctoral Researchers in STEM, WONDERS, conference.

We strive to help all students reach their potential, regardless of any disabilities or health conditions. Our inclusive programmes offer personalised support plans. If you have any questions, email the disability support team: disteam@liverpool.ac.uk

Meet some of our alumni

Dr Julia Tena Vidal



Júlia did her PhD in the Particle Physics group and the LIV.DAT CDT. She received the best PhD Award in 2023 for her outstanding work modelling neutrino interactions with matter. She is now working as a post-doctoral research assistant at the Tel Aviv University's Particle Physics Group.



Dr Amir Salehilashkajani



Amir did his thesis in our Accelerator Physics group working on beam monitoring. His device was installed at CERN's Large Hadron Collider in 2022. He is now a research scientist at CoMind, developing non-invasive brain imaging methods for patients with traumatic brain injuries.



Dr Jaimie Platt



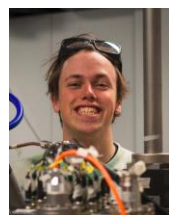
Jaimie graduated from her Nuclear Physics Ph.D. investigating the feasibility of a novel gamma-ray imaging system for characterising radioactive waste in 2021. She now works as a Decommissioning Characterisation Consultant at Amentum.



Dr Jake Diprose



Jake's did his PhD in the Condensed Matter group, working in chemical dynamics. His research centred on investigating the chemical physics of ion molecule reactions under cold and controlled conditions. He is currently continuing his research at the University of Liverpool as a postdoctoral research associate.



A warm welcome from our Postgraduate Research team!

