

**Job Description: Research Officer in Antihydrogen Physics**

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| **College/School:** | ***Science*** |
| **Department/Subject:** | ***Physics*** |
| **Salary:** | **£39,105 to £45,163 per annum together with USS pension benefits plus overseas allowance according to OECD cost-of-living corrections** |
| **Hours of work:** | ***35*** |
| **Contract:** | **This is a fixed term position for initially 6 months duration, extendable to 12 months.** |
| **Location:** | **This position will be based at CERN** |

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| **Introduction** | The ALPHA collaboration at CERN synthesises and traps antihydrogen for precision tests of fundamental symmetry. The collaboration is world leading in precision spectroscopy of antihydrogen and is currently finalising a new experiment for gravitational studies of antihydrogen. A major upgrade programme is under way with the aim to achieve or surpass the precision of spectroscopy in ordinary hydrogen. Swansea University is founding member and a major stakeholder in the collaboration. The successful candidate will join the Swansea team at CERN and will become a full member of the ALPHA collaboration. |
| **Background information** | The Department of Physics has five permanent academic staff members, three post-doctoral staff and three students actively contributing to the ALPHA project at CERN. You are encouraged to investigate these sites on the Internet for more general information about the College/Department of physics: www.swansea.ac.uk/physics, about living in Swansea and its surrounds: www.swansea.gov.uk and travelling to work at the University: <https://www.swansea.ac.uk/media/CampusPlan.pdf> |
| **Main Purpose of Post:** | 1. To undertake research at the Antiproton Decelerator (AD) facility at CERN with both the Swansea team and the ALPHA collaboration on preparing the next generation of antihydrogen experiments. This will involve work on sympathetic cooling of positrons, magnetometry and thermometry using laser-cooled Beryllium ions, as well as refinement of laser systems and associated instrumentation. 2. To participate fully in the ALPHA experiment during antiproton beamtime at the AD and in particular to take responsibility for the increasing the amount of anti-atoms trapped through the use of cryogenic positrons. 3. To liaise effectively with all colleagues working in the Antihydrogen group, both at Swansea and CERN. |
|  | 1. Pro-actively contribute to and conduct research, including gather, prepare and analyse data and present results, exhibiting a degree of independence in terms of specifying the focus and direction of that research. 2. Prepare reports, draft patents and papers describing the results of the research, both confidential and for publication. The appointee is expected to be actively engaged in the writing and publishing of research papers, particularly those intended for publication in refereed (eg international) journals or comparable as a normal part of their role. 3. Be self-motivated, apply and use their initiative, aiming to determine suitable ways to tackle challenges and seeking guidance when needed 4. Use creativity to analyse and interpret research data and draw conclusions on the outcomes 5. Interact positively and professionally with other collaborators and partners within the College, elsewhere in the University and beyond both in industry/commerce and academia. 6. Contribute pro-actively to the development of external funding applications to support their own work, that of others and the College and the Institution in general. The appointee will be expected as a normal part of their work to be actively engaged in writing, or contributing to writing such applications. 7. Contribute to College organisational matters in order to help it run smoothly and to help raise its external research profile. 8. Keep informed of developments in the field in both technical and specific terms and the wider subject area and the implication for commercial applications and the knowledge economy or academia. 9. When requested act as a representative or member of committees, using the opportunity to extend their own professional experience. 10. Demonstrate and evidence own professional development, identifying development needs with reference to Vitae Researcher Development Framework particularly with regard to probation, performance reviews, and participation in training events. 11. Maintain and enhance links with the professional institutions and other related bodies. 12. Observe best-practice protocols in maintenance and retention of research records as indicated by HEI and Research Councils records management guidance.  This includes ensuring project log-book records are deposited with the University/Principal Investigator on completion of the work 13. To promote equality and diversity in working practices and maintain positive working relationships |
| **General Duties** | 1. To promote equality and diversity in working practices and maintain positive working relationships 2. To conduct the job role and all activities in accordance with safety, health and sustainability policies and management systems, in order to reduce risks and impacts arising from the work activity 3. To ensure that risk management is an integral part of any decision making process, by ensuring compliance with the University’s Risk Management Policy. |
| **Person Specification** | **Essential criteria:**   1. A first degree in physics and a PhD in Experimental Physics 2. Evidence of active engagement, personal role, and contribution to writing and publishing research papers, particularly for refereed journals. 3. Evidence of the capacity for active engagement in designing research and writing, or contributing to writing, applications for external research funding. 4. Ability to demonstrate significant independence of focus and direction in research – determining ’what, why, when and with whom' to progress work. 5. Evidence of ability to perform advanced research experiments in Physics and to have demonstrated independence at this level. 6. A commitment to continuous professional development 7. Experience with laser-cooling of trapped ions.   **Desirable Criteria**   1. PhD level experience in ion or lepton trapping, laser-cooling and experimental atomic physics and in use of technology (e.g. Labview programming) to drive modern laboratory instrumentation. 2. Experience of supervising undergraduate or postgraduate student projects   Welsh Language level:  Level 1 – ‘a little’ - pronounce Welsh words. Able to answer the phone in Welsh (good morning / afternoon). Able to use very basic every-day words and phrases (thank you, please etc.). Level 1 can be reached by completing a one-hour training course.  For more information about the Welsh Language Levels please refer to the Welsh Language Skills Assessment web page, which is available [here](https://www.swansea.ac.uk/welsh-language-standards/compliance/recruitment/). |
| **Additional Information** | Informal enquiries: Prof Niels Madsen [n.madsen@swansea.ac.uk](mailto:n.madsen@swansea.ac.uk)  Target start date is 01/02/2025 |

  