

Postdoctoral research position (f*m)

in physics with trapped charged particles for antihydrogen production

The Stefan Meyer Institute for Subatomic Physics of the Austrian Academy of Sciences in Vienna (www.oeaw.ac.at/smi) is devoted to the study of fundamental symmetries and interactions using antihydrogen. A postdoctoral researcher position of 40 hours per week (duration 2 years) in the “Precision experiments at low energies” division is open for applications.

The successful candidate will join the ASACUSA collaboration working on measurements of the hyperfine structure of antihydrogen (for more details see www.antihydrogen.at and home.cern/science/experiments/asacusa). The position is open for a duration of 24 months during which time the candidate will be seconded to CERN.

Role

The position is part of the ASACUSA collaborations work to perform precision spectroscopy of the ground state hyperfine structure of antihydrogen, to set stringent constraints on exotic physics beyond the standard model. The successful candidate will be working on so called ‘mixing schemes’ to improve the antihydrogen yield produced by mixing charged antimatter plasmas in penning traps. This work will require fine-tuning of plasma temperatures, densities and shapes, using radio-frequency manipulation drives and evaporative cooling methods. Moreover, trapping parameters need to be understood and optimized, and the developed manipulation methods need to be implemented into the software control system. As such, any experience of nonneutral plasma trapping and manipulation, experience with low-noise methods, Rydberg atom detection, resonant charge detection and trap design would be an advantage.

During the period of this project, as well as experiments on plasma manipulation, a new mixing trap will be developed including a new trap-electrode stack, housing and cryogenic environment.

The candidate will take part in ASACUSA's antiproton beam time campaigns in CERN's antimatter factory.

The position is part of the new antimatter junior group at SMI lead by Dr D. J. Murtagh, this project is supported by the FWF under grant number P32468. The group consists of two postdocs a PhD student and an MSc student who will all work closely together to perform antihydrogen research.

Requirements

Applications are invited from outstanding candidates with a PhD in a relevant field (e.g. atomic physics, trap physics, plasma physics). Knowledge of common experimental techniques such as UHV, magnets, detectors (e.g. MCP/PMT), electronics, experiment design and gas handling etc as well as excellent communication skills both oral and written are required. The candidate must be fluent in English and any experience of French would be an advantage.

Offer

Contracts will have a duration of two years. The minimum annual gross salary before tax will be 42.552 EUR based on the Academies scheme VG 4/2. An additional allowance will be available due to the secondment to CERN of 12.720 EUR per year.

Application

CV, cover letter and details of three referees should be submitted to smi@oeaw.ac.at before the 30th November 2019, the position is available for immediate start. For informal enquiries and more information, please email: dan.murtagh@cern.ch