

Job ID: SMI067DOC120

The Stefan Meyer Institute for Subatomic Physics ([SMI](#)), division “Precision experiments at low energies” of the Austrian Academy of Sciences ([OeAW](#)), Austria’s leading non non-university research and science institution, is offering a new

## PHD STUDENT POSITION (F\*M) in (anti)hydrogen research

(part-time / 30h per week)

The PhD thesis will take place within the ASACUSA collaboration which aims at measuring the ground state hyperfine splitting GS-HFS of hydrogen and antihydrogen to provide a sensitive test of CPT symmetry. The successful candidate will be responsible for the hyperfine spectroscopy measurements. Experiments with antiprotons will commence after the Long Shutdown 2 of CERN which has been extended due to the Covid-19 pandemic, and antiprotons are expected to be available earliest in fall of 2021. Experimental activities will focus initially on experiments using a polarized hydrogen beam developed by ASACUSA.

A first goal is to finish the design for the first-phase Rabi type antihydrogen GS-HFS experiment following an on-going re-design of the antihydrogen mixing traps, and to perform GS-HFS measurements with antihydrogen. In a second task the accuracy of the experiment has to be improved by reducing the velocity of the beam and implementing a Ramsey method currently under development. This will be done using the hydrogen beam at SMI and applied to antihydrogen after the Rabi measurements have been concluded.

The successful candidate is expected to start not later than November 1, 2020 and will participate in the graduate school Particles and Interactions [www.dkpi.at](http://www.dkpi.at).

### Requirements

- Master (or equivalent) degree in a relevant field (e.g., low energy precision physics using atomic physics methods)
- Basic knowledge of either atomic beam preparation, manipulation, and spectroscopy or comparable methods in low-energy ion beam manipulations are required.
- Experience with the Ramsey method will be a key advantage.
- Any experimental experiences working with UHV systems, cryogenics, microwave technology, magnetic and electric field generation, detectors, data acquisition, and characterization techniques of low-energy experiments are an important asset.
- Specific programming skills like particle tracking, C++, GEANT4, ROOT, or LabVIEW would be advantageous.
- Take part in beam-time campaigns at CERN for several months per year.
- Good communication skills and very good English language skills. Any experience of either German or French would be an advantage.

We offer an annual gross salary of € 30.878,40 (before taxes) according to the salary scheme of the Austrian Science Fund ([FWF](#)). The contract will have a duration of three years.

Please send your application including CV, letter of motivation, graded study records, and a recommendation letter of your Master’s thesis supervisor via e-mail to [smi@oeaw.ac.at](mailto:smi@oeaw.ac.at) (mentioning Job ID: SMI067DOC120) no later than **August 31, 2020**.

For informal enquiries and more information, please email [eberhard.widmann@oeaw.ac.at](mailto:eberhard.widmann@oeaw.ac.at).

*The Austrian Academy of Sciences (OeAW) pursues a non-discriminatory employment policy and values equal opportunities, as well as diversity. The OeAW lays special emphasis on increasing the number of women in senior and in academic positions. Given equal qualifications, preference will be given to female applicants.*