

The Stefan Meyer Institute for Subatomic Physics in Vienna ([SMI](#)) of the Austrian Academy of Sciences ([OeAW](#)), Austria's leading non-university research and science institution, is devoted to the study of fundamental symmetries and interactions and is currently offering a

POST DOC POSITION (F*M)

IN EXPERIMENTAL STUDY OF LOW-ENERGY QCD PERFORMING KAONIC ATOM SPECTROSCOPY (full time / 40h per week)

for a duration of two years, starting on February 1, 2020.

Confinement implies that QCD in the low-energy limit is realized as a theory of hadronic degrees of freedom rather than on the quark-gluon level. An appropriate framework is Chiral Effective Field Theory, a systematic approach describing the interactions of bosons amongst each other and with baryons. Measurements of the antikaon–nucleon interaction close to threshold provides crucial information on low-energy QCD, e.g. on the interplay between spontaneous and explicit chiral symmetry breaking, with impact to astrophysics (neutron stars).

The proposed kaonic deuterium experiments E57 at J-PARC and SIDDHARTA-2 at DAΦNE will measure transition X-ray energies to the ground state of kaonic deuterium atoms. The experimental challenge of kaonic deuterium measurements are the very small kaonic deuterium X-ray yield, the large width (compared to kaonic hydrogen) and the difficulty to perform X-ray spectroscopy in the high radiation environment of a machine, like DAΦNE or J-PARC, but both with completely different machine related background sources. It was therefore crucial to develop a large area X-ray detector system to optimise on the signal side and to control and improve the signal-to-background ratio by improving the timing capability as well as by the usage of charged particle veto devices.

We have developed a large area X-ray detector system and dedicated veto- and particle tracking systems for the study of kaonic atoms. The experimental apparatus for SIDDHARTA-2 is already installed at DAFNE, ready for commissioning. Data taking is planned for 2020/21. The E57 apparatus at J-PARC needs still some improvements.

The PostDoc candidate will participate in data taking at DAFNE and contribute to data analysis. In addition, she/he has to participate in improving the setup for J-PARC by performing dedicated MC simulations to optimise the signal-to-background ratio.

Requirements: PhD in Experimental Physics, ROOT (for data analysis), GEANT4, programming skills (C++)

We offer a full-time employment for a duration of two years. The annual gross salary before taxes will be about € 53.260,00 based on the salary Scale of the Austrian Science Fund ([FWF](#)).

Application

Please send your CV, cover letter and details of 3 referees via e-mail to smi@oeaw.ac.at. Applications can be accepted up to December 30, 2019 but it is a rolling interview procedure so please send your application in time.

For informal enquiries and more information, please contact Dr. Johann Zmeksal johann.zmeksal@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.