

Post-doctoral Position

Subject: Measurement of beta decay properties of nuclei of interest for nuclear structure and astrophysics, antineutrino spectra and reactor physics.

Team: Nuclear Structure and Energy, SUBATECH laboratory, Nantes, France.

Number of months: 24

Type of contract: CNRS

Detailed Description:

The Nuclear Structure and Energy group of the SUBATECH laboratory has experimental activities devoted to the study of beta decay properties of nuclei of interest nuclear structure and astrophysics, antineutrino spectra and reactor physics, in close collaboration with the team of IFIC Valencia in Spain. These measurements are performed using the TAGS (Total Absorption Gamma-ray Spectroscopy) technique, based on the detection of the gamma rays de-exciting the daughter nucleus with a calorimeter. This technique gives access to the beta strength distribution, directly comparable to theoretical microscopic models. It allows in addition to avoid the Pandemonium effect.

The main tasks of the postdoctoral researcher will be related to the two experiments described below. A new TAS experiment proposed by the SUBATECH team in collaboration with the team from IFIC of Valencia is planned to occur in 2017-2018 at the ALTO facility in Orsay. The main objective is to study neutron-rich nuclei in the vicinity of ^{132}Sn . The physics case proposes to study the Gamow-Teller strength accessible through beta decay in this region and to illustrate a new idea proposed by the team to study low-lying collective modes through beta decay. Moreover some of the proposed nuclei are beta-delayed neutron emitters and are of importance for the r-process. These results will be compared with microscopic calculations performed by our colleagues from Bruyères-Le-Châtel and Saclay. Another experiment, proposed by SUBATECH, IFIC and Surrey, is also planned at the Jyväskylä facility in 2018 aiming at measuring beta energy spectra from first forbidden decays of fission products which are important contributors to the reactor antineutrino spectrum. The design of a new electron detector is on-going.

The postdoctoral researcher will participate to the above experimental activities depending on the group priorities. The work will be composed of instrumental developments and data analysis. Applicants should have their PhD (in nuclear physics) at the time of the starting date. A good experience in experimental nuclear structure and in C++ programming, in particular with ROOT and GEANT4, would be an advantage. The candidates should demonstrate the ability to work in a research environment, prepare research results for publication and for presentation at scientific meetings.

The review of applications is starting now and will continue until the position is filled. However, priority will be given to applications received before the deadline of May 18th, 2017. The job can start at the earliest convenience. Applicants should send (by email) their curriculum vitae, a list of publications indicating their personal contributions, a description of their previous activities and a short statement of research interests, all in pdf format, to:

muriel.fallot@subatech.in2p3.fr

Applicants need also to arrange for two letters of reference to be sent directly to the same email address.