

## Post-doctoral position in the WISArD experiment at CENBG Bordeaux

WISArD (Weak-Interaction Studies with  $^{32}\text{Ar}$  Decay) [1,2] is a high precision experiment mounted at the radioactive ion beam facility ISOLDE at CERN. Its aim is the test of the Standard Model in the weak-interaction sector, using nuclear  $\beta$  decay, as a complement to high energy physics experiments. Exotic currents in the weak interaction are searched for in the beta-neutrino angular correlation coefficient, usually called  $a_{\beta\nu}$ , which will be measured at the 0.1% precision level.

The  $a_{\beta\nu}$  correlation coefficient governs the kinematics of the  $\beta$  decay: depending on its value, the recoil energy of the nucleus varies. Direct measurements of this energy are possible but very challenging, as it does not exceed a few keV. The approach chosen in the WISArD experiment is the measurement of the energy distribution of protons emitted in flight by the daughter nucleus of  $^{32}\text{Ar}$ . As the protons are emitted in flight, the Doppler effect modifies the measured energies which thus reflect the nuclear recoil.

After a successful proof-of-principle experiment in November 2018, before CERN's long shut-down, the short-term aim is the design and mounting of the final set-up for a series of measurements once CERN restarts experiments in 2021.

The NEX group of CENBG seeks candidates for a three-year post-doctoral position to work on WISArD. Candidates should have completed their PhD in Nuclear Physics or a related subject since less than 5 years. They are expected to have good knowledge in experimental techniques, experiment electronics, data acquisition systems, analysis tools (e.g. ROOT), simulation tools (e.g. GEANT4, SIMION etc.) as well as scientific programming. They will work in a highly competitive international environment. The position can be either at CENBG in Bordeaux or at ISOLDE/CERN. This will be decided together with the candidate selected. The main tasks include Monte-Carlo simulations to optimise the experimental set-up as well as the tests and mounting of the silicon detector set-up for proton detection and of the plastic scintillators for the  $\beta$ -particle detection. Interest and participation in other development and experiments of our research group will be strongly supported.

Researchers interested in the position are requested to submit a motivation letter, a CV as well as support letters to Bertram Blank ([blank@cenbg.in2p3.fr](mailto:blank@cenbg.in2p3.fr)) before March 15, 2019.

[1] <http://isolde.web.cern.ch/experiments/wisard>

[2] N. Severijns, B. Blank, J. Phys. G: Nucl. Part. Phys. 44 (2017) 074002