

Post-doctoral position for the PIPERADE setup at CENBG Bordeaux

CENBG is involved in technical developments for the DESIR facility [1] at different levels. One of these developments presently being pursued is the construction and commissioning of the PIPERADE facility [2-3], an ensemble of equipments consisting of a RFQ cooler-buncher, called the General Purpose Ion Buncher (GPIB), and the PIPERADE double Penning-trap system.

The GPIB will be installed in the central beam line of DESIR and will therefore take beams from the S3 facility and the upgraded SPIRAL1 facility. It will deliver cooled ion bunches to the different experimental setups of DESIR. The PIPERADE trap setup will act as a mass separator to deliver large and clean ion samples to the setups of DESIR (such as tape stations for decay spectroscopy), or as a mass spectrometer. Mass measurements will allow investigating the nuclear structure far from stability, to constrain the stellar nucleosynthesis models as well as to study the weak interaction.

While the construction of an offline ion source and the GPIB have been completed in 2017, the Penning trap system is presently finalised. CENBG is looking for a 2-year post-doctoral fellows to test for the first time the Penning traps and characterize them. Mass measurement schemes will be tested as well as different mass separation methods. In particular, the first trap of PIPERADE being larger than usual ($r_0 = 32\text{mm}$), mass separation techniques will be tested with a large number of ions, and push the limits further in terms of space charge effects. Higher-resolution methods with fewer ions in the second trap will also be investigated.

The fellow will integrate the Exotic Nuclei group of CENBG and will also be given the opportunity to participate in the experiments the group carries out on various facilities (GANIL, JYFL, RIKEN, ISOLDE...) about exotic decays ($2p$ radioactivity, β delayed proton emission, ...) or weak interaction studies with nuclear beta decay.

Candidates should have completed a PhD in Nuclear Physics or a related subject since less than 3 years. They are expected to have a good knowledge in experimental techniques, ion optics and ion optics simulation tools (e.g. SIMION), ion trapping and detection techniques, as well as scientific programming. They will work in a highly competitive international environment.

Researchers or research engineers interested in the positions are requested to submit a motivation letter, a CV as well as support letters to Pauline Ascher (ascher@cenbg.in2p3.fr) and Mathias Gerbaux (gerbaux@cenbg.in2p3.fr) before March 15, 2019.

[1] <https://www.ganil-spiral2.eu/en-GB/scientists/ganil-spiral-2-facilities/experimental-areas/desir/>
<http://www.cenbg.in2p3.fr/desir/>

[2] P. Ascher *et al.*, EPJ Web of Conf. 66, 11002 (2014)

[3] E. Minaya Ramirez *et al.*, NIMB 376, 298 (2016)