



## PhD position in experimental physics

---

### PIPERADE: Offline commissioning and first online experiments at DESIR

---

#### **Description:**

PIPERADE (Pièges de Penning pour les RADionucléides à DESIR) is a double Penning trap being developed in Bordeaux, which will be installed at the DESIR facility at GANIL.

This instrument has two objectives: 1) perform precision mass measurements of exotic nuclei, providing valuable information on nuclear structure, the forces acting within the atomic nucleus (strong and weak interactions), and stellar nucleosynthesis, 2) perform the mass selection of nuclei of interest among a large number of contaminants, with very high resolving power ( $> 10^6$ ) and a high capacity ( $> 10^4$  ions per bunch). It will therefore provide to all other experimental setups in the DESIR hall an ultra-pure ion beam, greatly improving the precision of measurements of various observables, such as lifetimes, charge radii or electromagnetic moments.

The characterization of PIPERADE using a stable-ion beam has been ongoing at LP2iB since 2019 and will be completed in 2027, before the instrument is transferred to GANIL in summer 2027. This PhD at GANIL will therefore be perfectly synchronized with the installation of PIPERADE at DESIR. The student will actively contribute to the installation and offline commissioning of the instrument, i.e. investigating the systematic uncertainties on the masses as well as studying the different purification techniques. He/she will also participate to the first online experiment at DESIR with PIPERADE. Depending on the timeline of the project, he/she will also have the possibility to analyse online mass spectrometry data from other facilities, such as from IGISOL/JYFL.

#### Expected skills:

Python programming, Experimental nuclear physics, Mass spectrometry, Electronics and data acquisition, Ion trapping

#### Contact:

Jean-Charles Thomas (GANIL)

Pauline Ascher (LP2iB)

Phone:

+33 (0)5 57 12 09 05

email: [jean-charles.thomas@ganil.fr](mailto:jean-charles.thomas@ganil.fr)

[ascher@lp2ib.in2p3.fr](mailto:ascher@lp2ib.in2p3.fr)

GANIL, BP 55027, 14076 Caen France