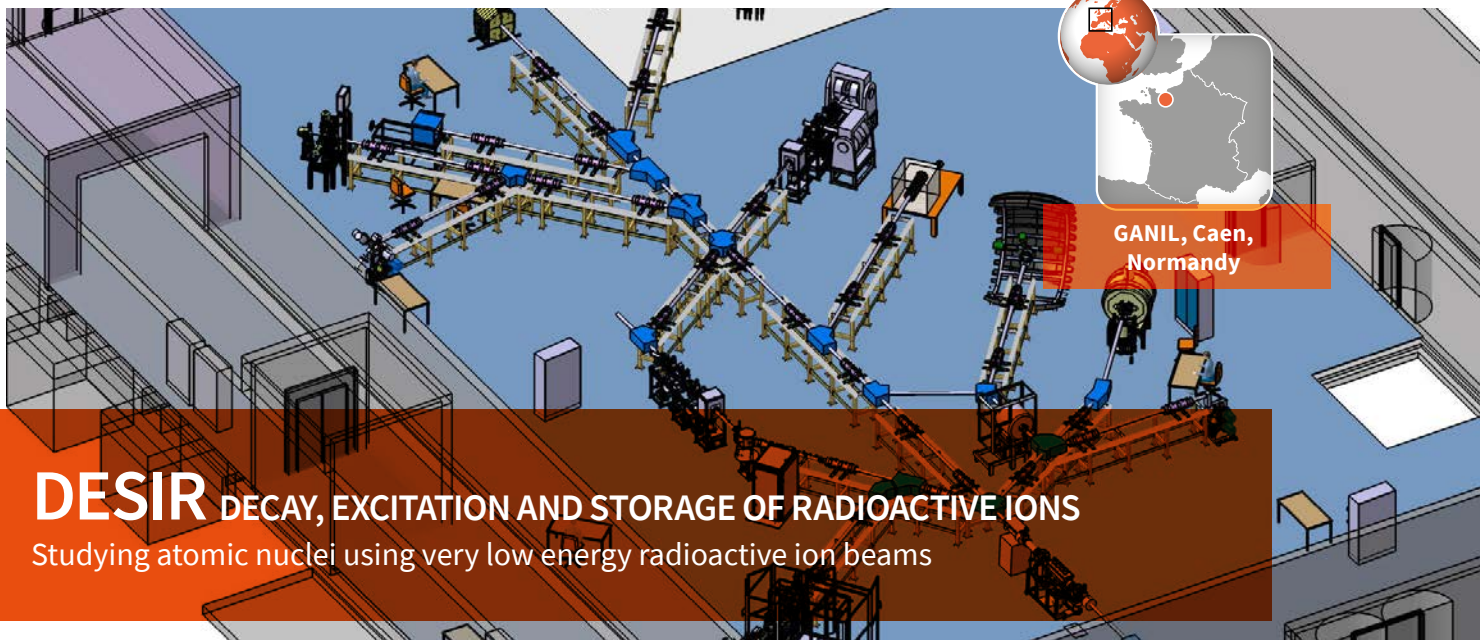


Study of exotic atomic nuclei



DESIR

DECAY, EXCITATION AND STORAGE OF RADIOACTIVE IONS

Studying atomic nuclei using very low energy radioactive ion beams

© CENBG/LP2I

- **Scientific leader:** Bertram Blank (CENBG)
- **IN2P3 Laboratories involved:** CENBG (Bordeaux), GANIL (Caen), LPCC (Caen), IJCLab (Orsay), IPHC (Strasbourg)
- **Nature:** research infrastructure
- **Status:** Project under construction, jointly funded by IN2P3, CEA, EQUIPEX, CPER Normandy/Aquitaine and a Franco-German cooperation FAIR/SPIRAL2 contract
- **Website:** <https://www.ganil-spiral2.eu/scientists/ganil-spiral2-facilities/experimental-areas/desir/>

SCIENTIFIC OBJECTIVES

The DESIR room will use high purity and very good optical quality radioactive ion beams of various types. It will be equipped with several sets of detectors dedicated to several studies. The evolution of the structure and shape of the atomic nucleus as a function of its number of protons and neutrons will be analysed. The fundamental interactions acting at the core of the nucleus will be studied, as will rare modes of radioactivity and the synthesis processes of chemical elements in stars.

RESOURCES DEPLOYED

- The 1 500 m² platform will be subdivided into 3 functional areas:
- DETRAP: for trapping and purifying ions, measuring the mass of their nuclei and studying fundamental interactions.
- LIGHT: consisting of laser spectroscopy lines and a laser nucleus polarisation device to study the structure and shape of nuclei.
- BESTIOL: a set of detectors to study the radioactive decay properties of exotic nuclei: charged particles, gamma radiation and neutrons.

25 laboratories involved

1 500 m²: surface area of the platform

10 participating countries

26 millions euros (construction cost)

2026 start of experiments

IN2P3 CONTRIBUTIONS

- General coordination, infrastructure, safety, security (GANIL).
- Ion beam purification equipment, monitoring/control of ion beam transport lines.
- Ion beam emittance reduction equipment.
- Ion beam transport line architecture and components.
- Ion beam characterisation equipment.

2005

Emergence of the proposal

2008

First technical report

2011

Preliminary funding via the EQUIPEX programme

2018

Selection of a prime contractor for construction

2024

Progressive start-up

2026

Start of experiments anticipated