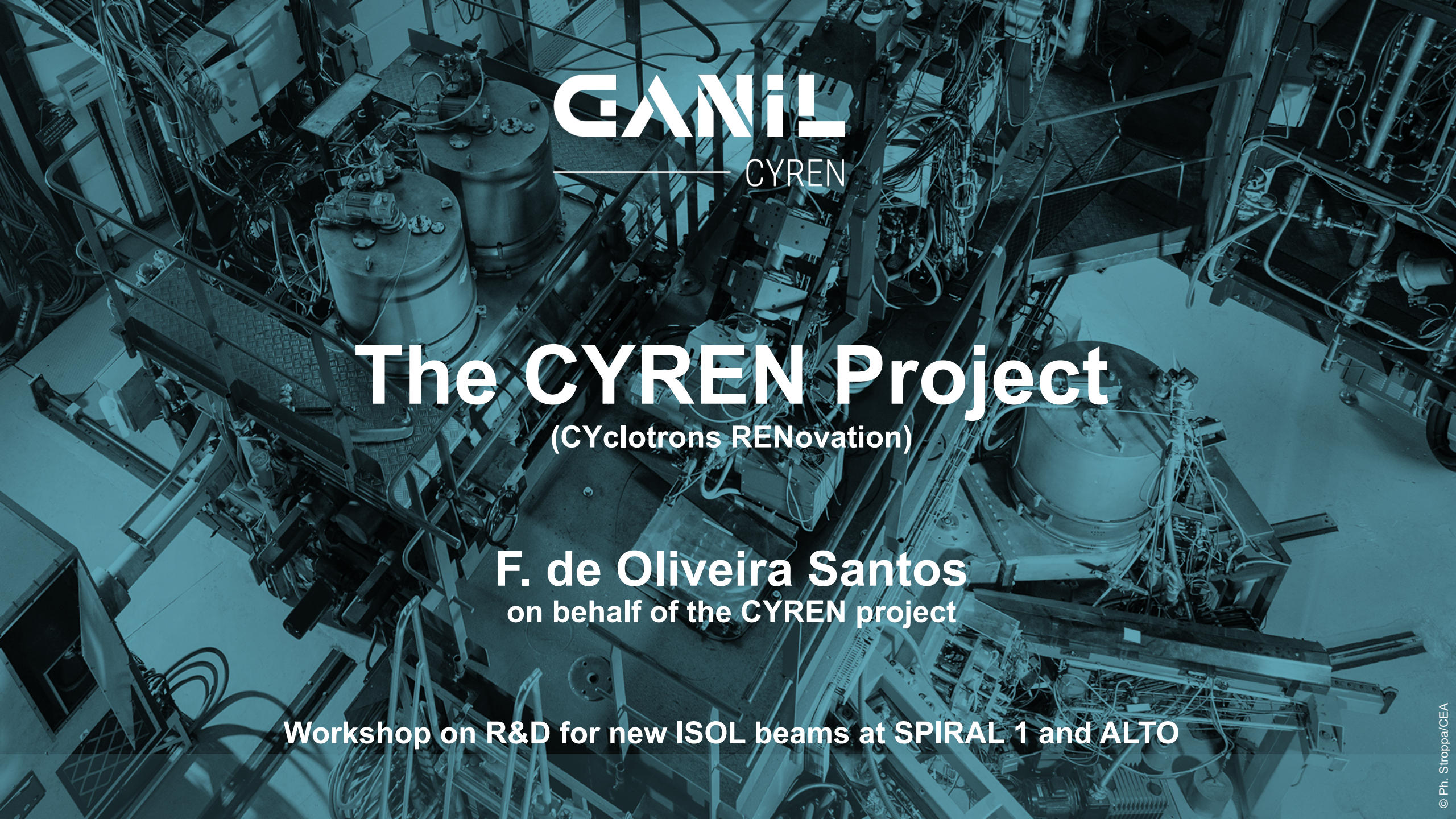


GANIL
CYREN

The CYREN Project

(CYclotrons RENovation)

F. de Oliveira Santos

on behalf of the CYREN project

Workshop on R&D for new ISOL beams at SPIRAL 1 and ALTO

Objectives

- To keep the facility in operational conditions for at least 20 years
- To optimize manpower needed for maintenance after refurbishment

Organisation

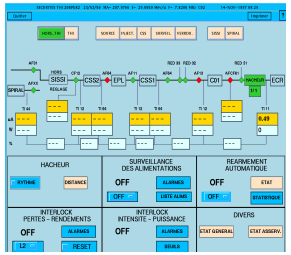
- Project manager: P. ANGER
- Deputy project manager: P.-E. BERNAUDIN
- Strategic pilot: F. DE OLIVEIRA SANTOS

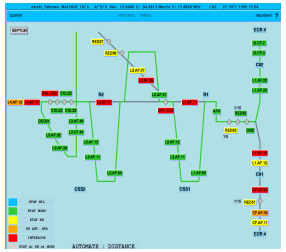
Project launched in September 2024
1st review with COPIL in March 2025
Kick-off meeting scheduled for September 2025
1,24 M€ allocated by the State-Region Plan Contract 2021-2027
21 M€ allocated by French Ministry of Research and Education
+ GSI GANIL agreement under discussion

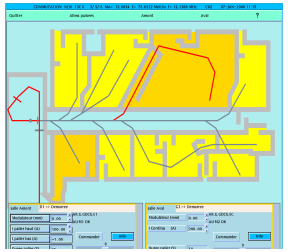
Many Working Groups (non-exhaustive)

Power Supplies

HF cavities

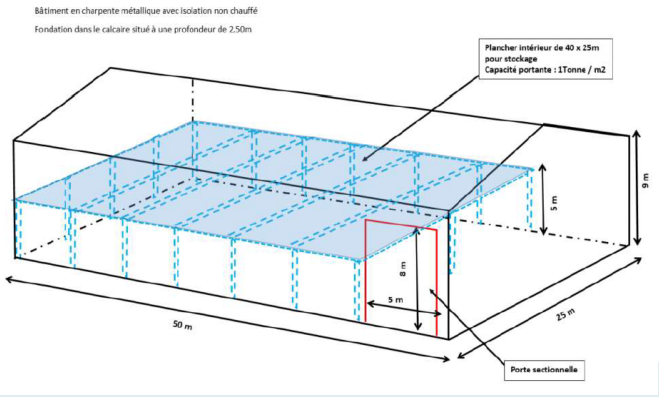






Remote control

Radiation detectors



Storage building

Electrical distribution

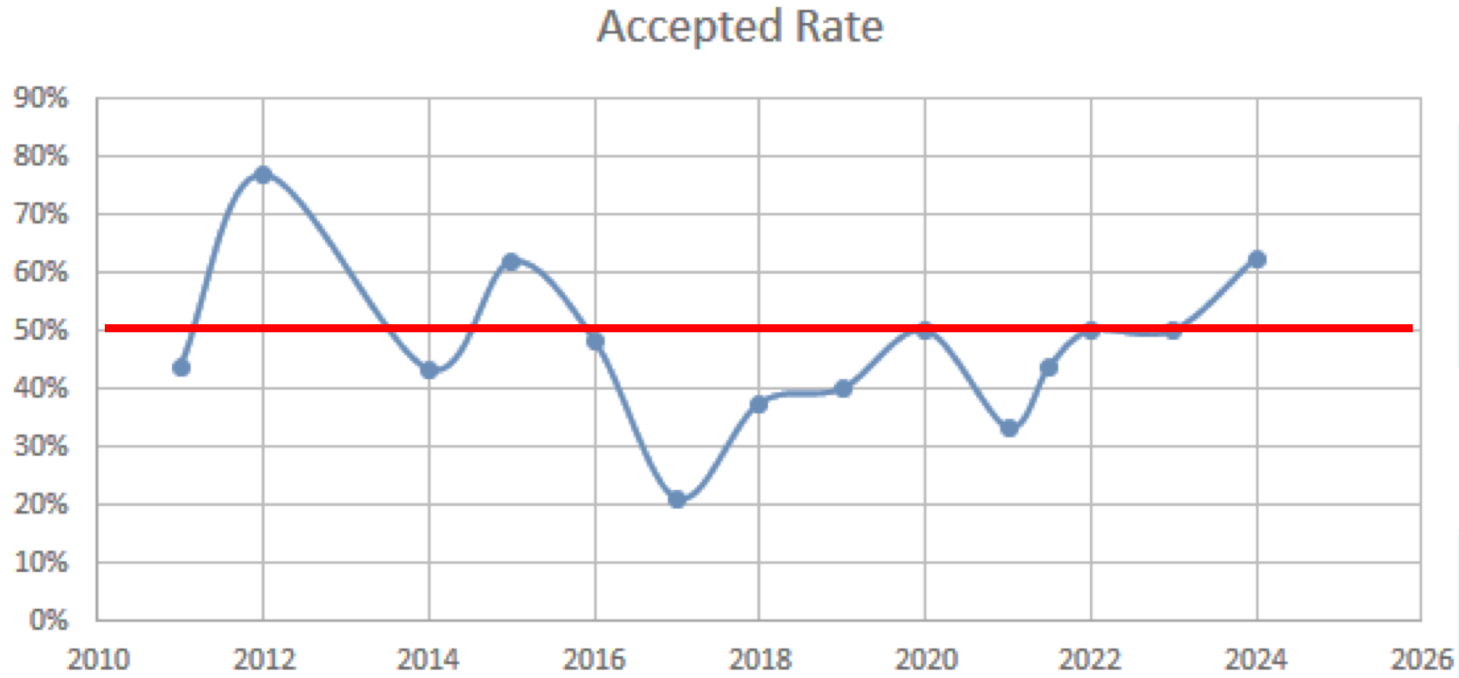
Cooling Systems

Motivations

Past: Ageing of the facility (water leaks in CSS cyclotrons, unavailability increased between 2010 and 2020). Avoiding a major breakdown in the future.

Present:

Beam demand = constant



@E. Clement

Future: Projects for 20 years, white book (Gilles de France et al) with 35 pages

Nuclear physics (fundamental interaction, nuclear structure, astrophysics, etc.) and interdisciplinary physics (materials science, radiobiology, atomic and molecular physics, etc.).

Feedback from the Scientific Community

GCM meeting 14-16 October 2024

- Higher beam reliability (less breakdowns, better time structure, renovation of all beam diagnostic devices...).
- Optimisation of human resources involved in cyclotron operation = more time for beam development (new SPIRAL1 beams)
- Communicate a schedule quickly. We need to pay close attention to programming and any negative interference between projects (AGATA, DESIR, GRIT, ACTAR-TPC, etc.).
- More intense secondary beams (SPIRAL1, LISE) are expected.

Schedule and impact on the GANIL's beams

Hypothesis for the planning

- Complete scenario with 4 refurbished CSS cavities
- A new test bench to minimize the cyclotrons shutdown to 4 months per year
- Changing one cavity per year between 2029 and 2032
- The continuation of the cyclotrons' operation (during semester 1)

in order to :

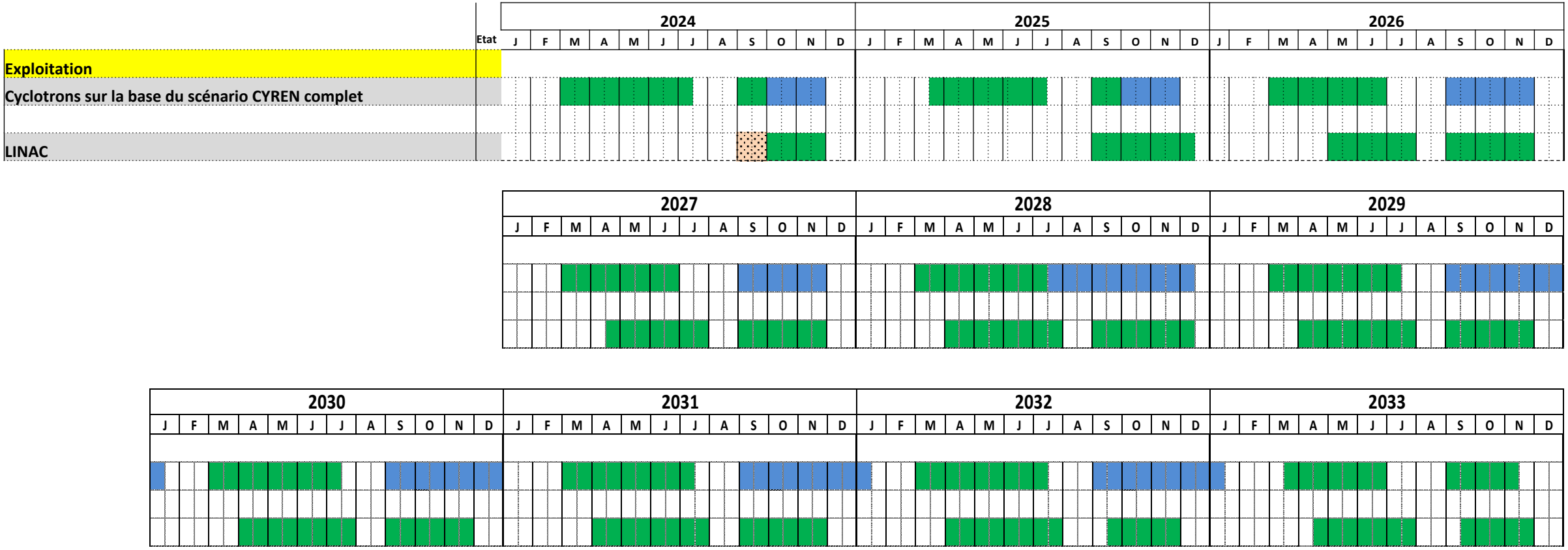
- to pursue a scientific program
- to carry out experiments with the AGATA detector (from 2029)
- to supply SPIRAL1 beams to the DESIR facility (from 2028)
- to supply beams to industry (SPACE)

⇨ Operating schedule incorporating the above assumptions

: Available beams

: CYREN

⇨ Operating schedule incorporating the above assumptions



: Available beams

: CYREN

Refurbishment (≠ upgrading)

- Strong demand for more intense beams on SPIRAL1 (ASN limit = 6 kW, present < 3 kW).
  New SPIRAL1 targets?
- New CLIM/LISE target?
- Improving the beam intensity? (changes here and there)
- Should the ‘CO2 upgrade’ wagon be attached to the ‘CYREN’ train now?

Thank you for your attention