université PARIS-SACLAY

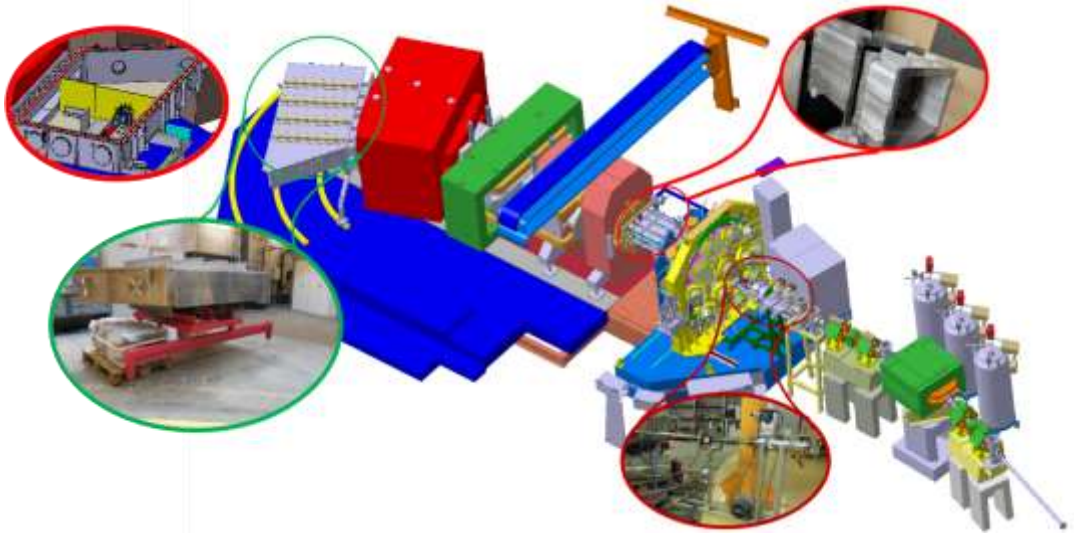
DE LA RECHERCHE À L'INDUSTRIE

cea

AGATA
ADVANCED GAMMA TRACKING ARRAY

Irfu

VAMOS Gas Filled mode: Status



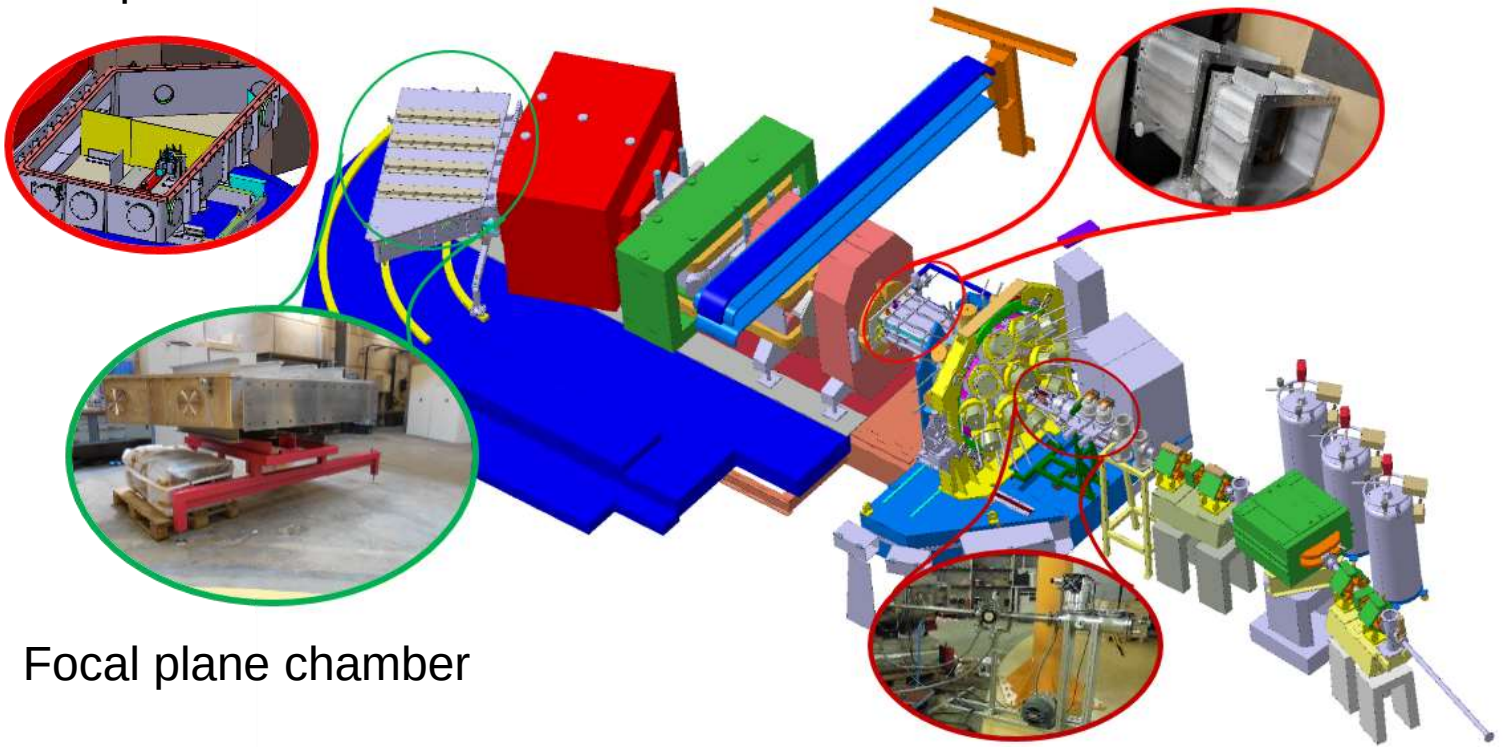
Ch. THEISEN – IRFU/DPhN

2018 09 13

VAMOS-GFS IN BRIEF

Beam dump and detection

Target & intermediate chamber

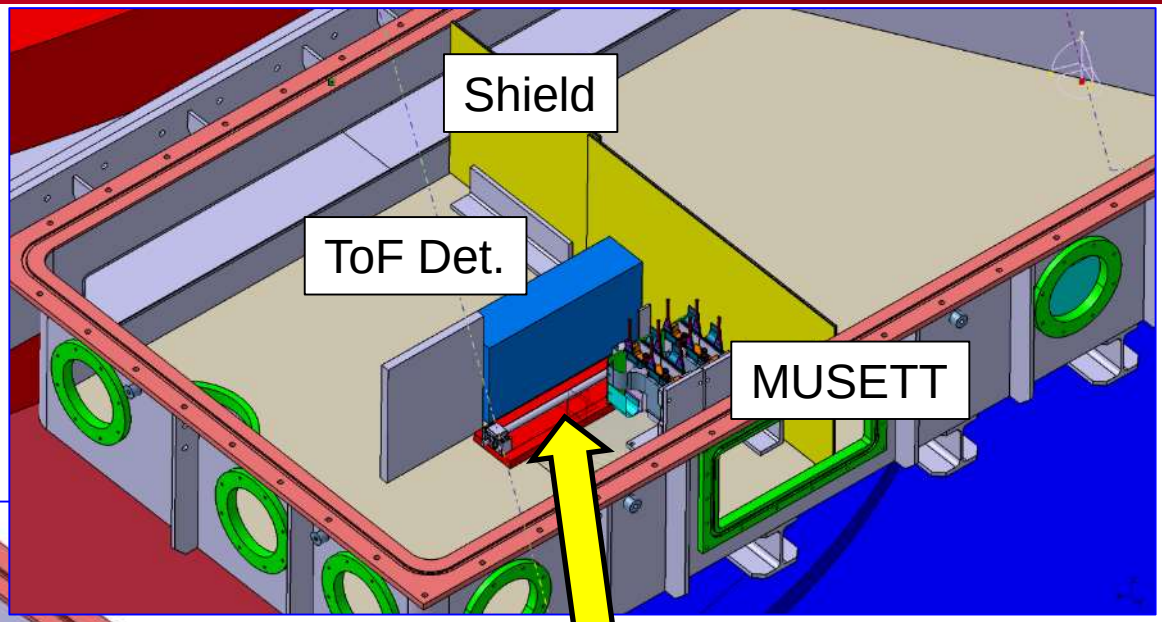


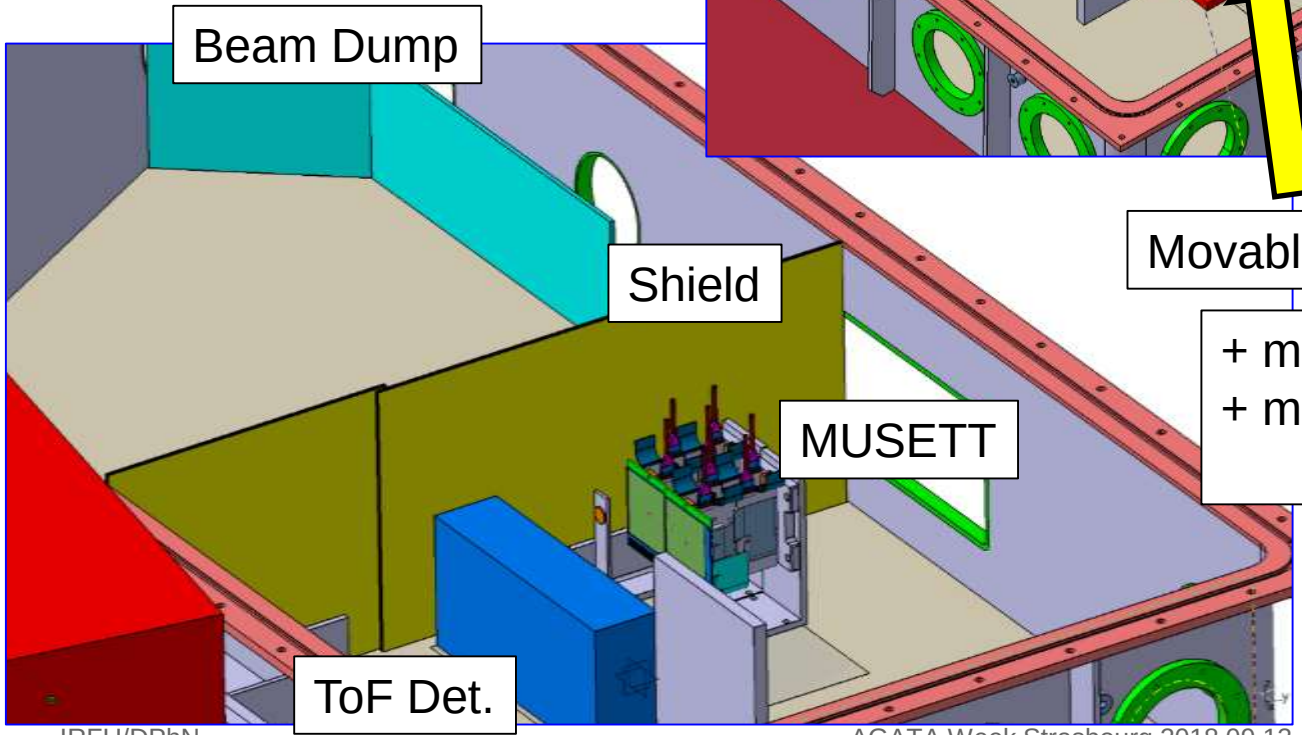
Focal plane chamber

C-Window

+ He regulation, PLC, detector electronics, data flow, …

FOCAL PLANE





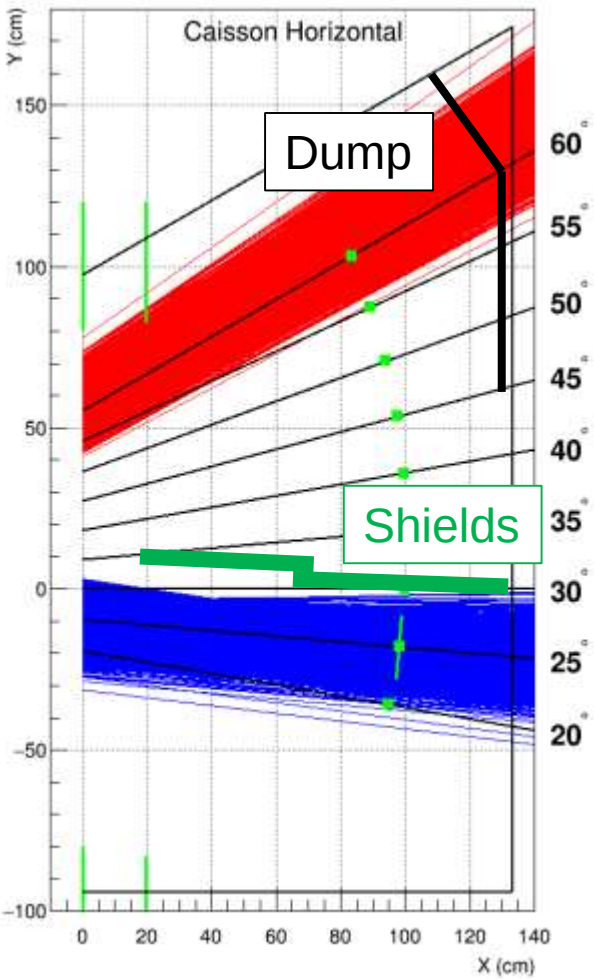
Movable α source

+ movable mask after dipole
+ movable mask in front gas-detector

MUSETT : NIMA 747 (2014) 69

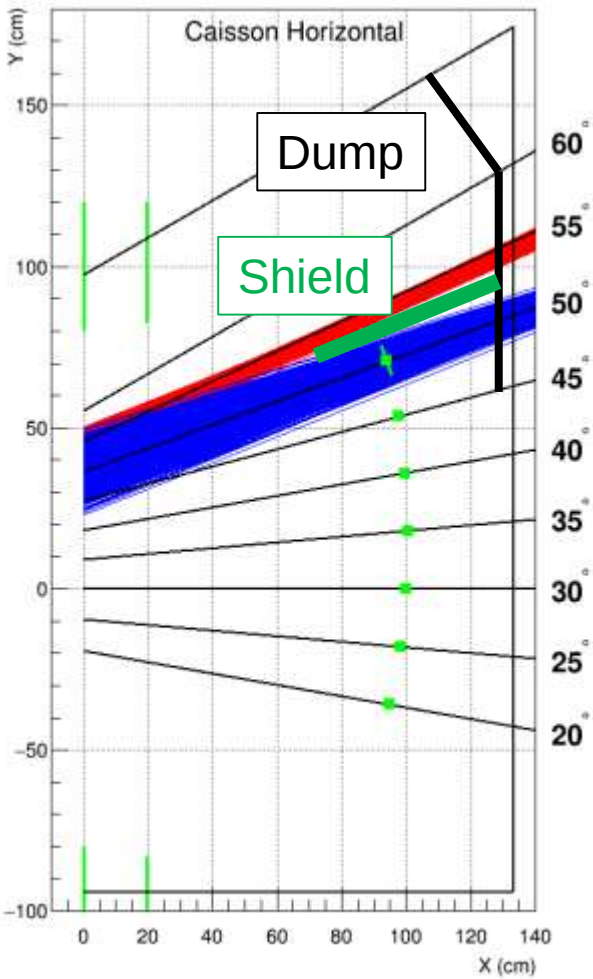
VAMOS-GFS : A VERSATILE DEVICE

$^{48}Ca+^{208}Pb$



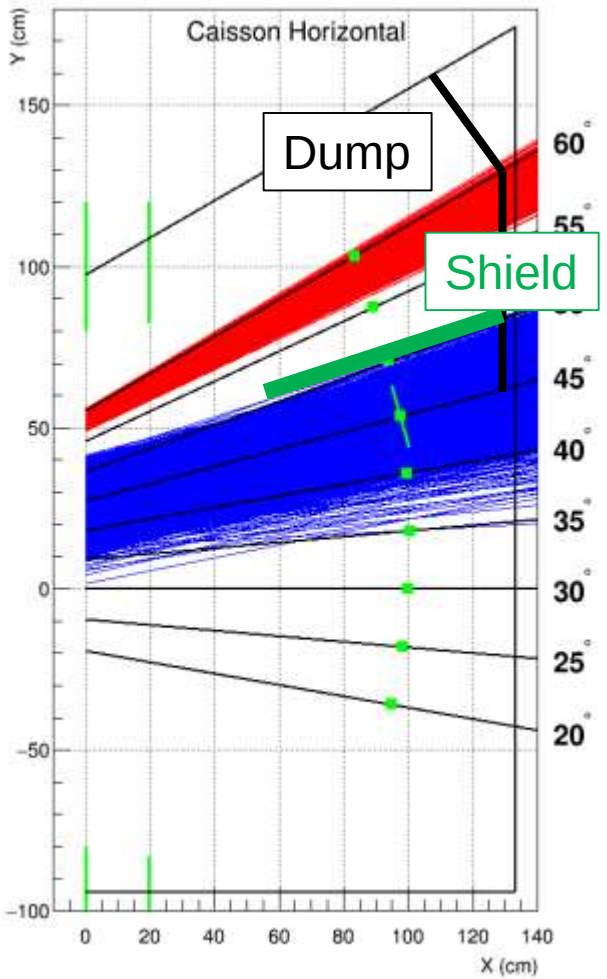
Det. 25°, 20x10 cm^2

$^{208}Pb+^{48}Ca$ + degrader



Det. 50°, 10x10 cm^2

$^{54}Fe+^{58}Ni$ + degrader



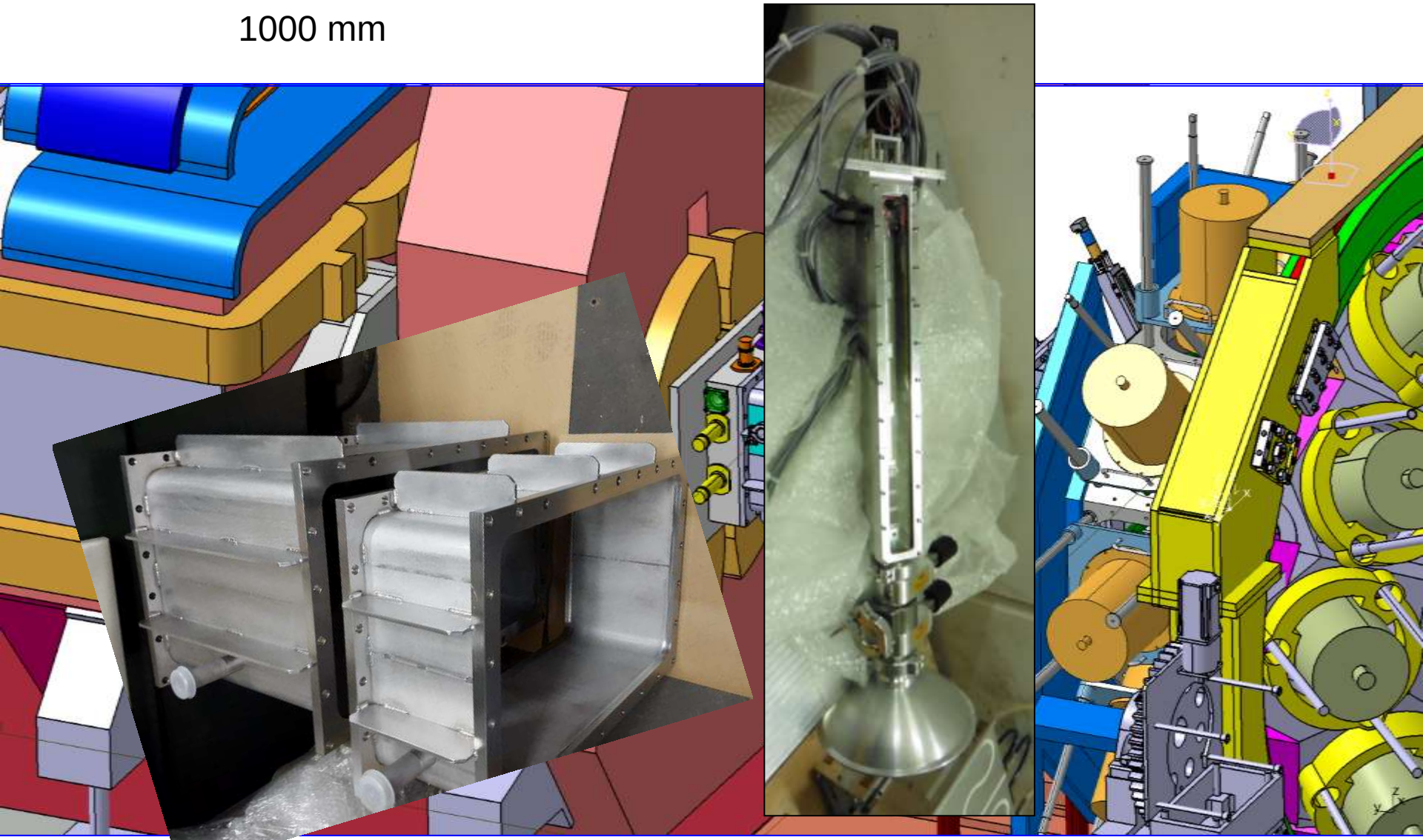
Det. 45°, 20x10 cm^2

STATUS : FOCAL PLANE CAISSON



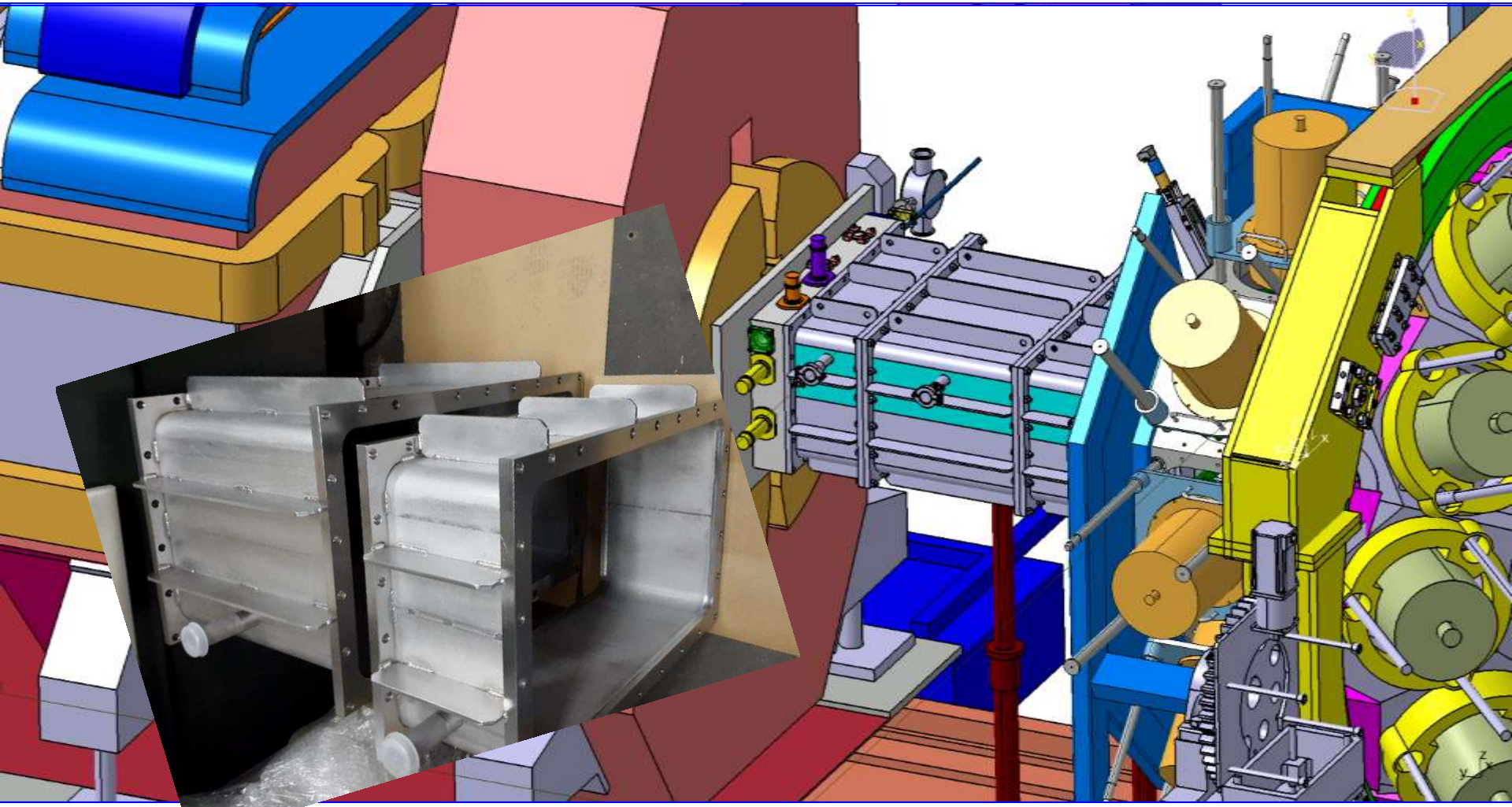
TARGET REGION

1000 mm



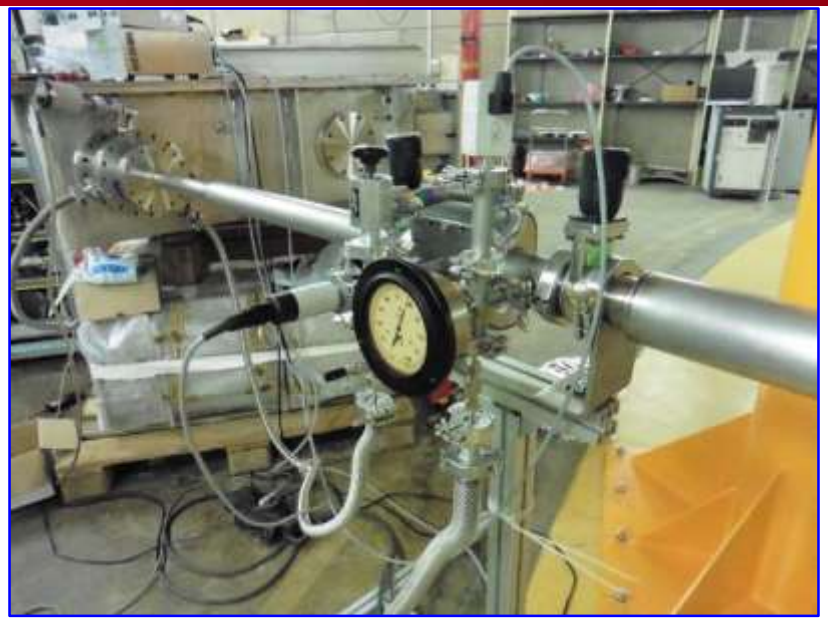
TARGET REGION

1000 mm

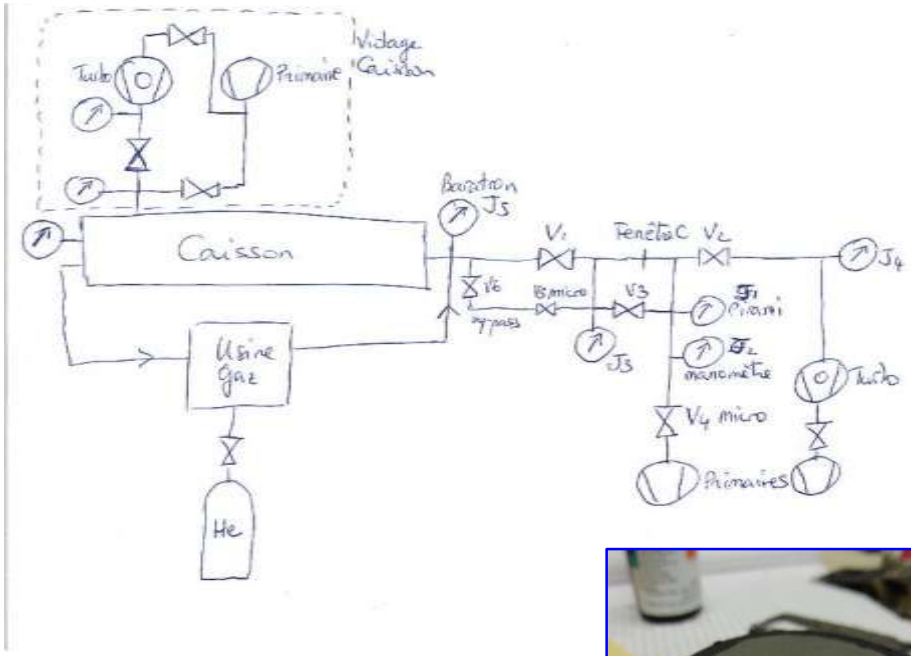


STATUS : C-WINDOW BEAM LINE TESTS IN G3

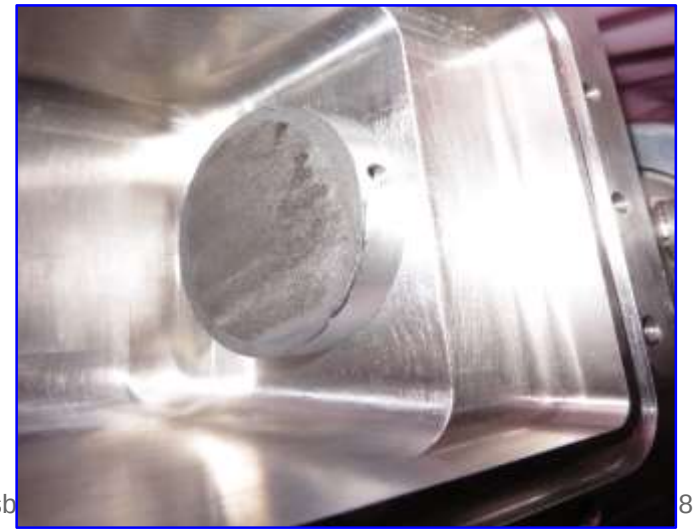
C-Window beam line connected to the focal-plane caisson to simulate the VAMOS volume.



Fine up to at least 5 mbar (specif. = 2 mbar max)



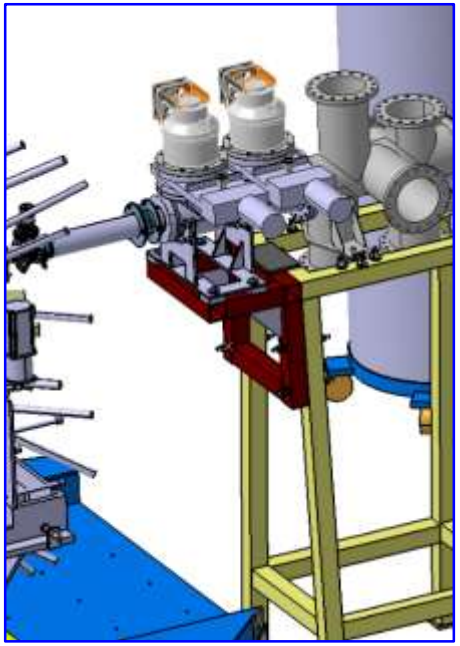




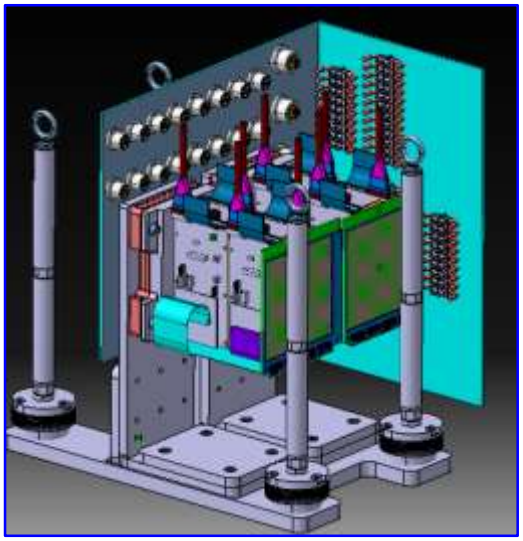
C Windows 80 µg/cm^2
G. Frémont, GANIL

FRAMES, DETECTORS, ETC…

Turbo pump frame: ready

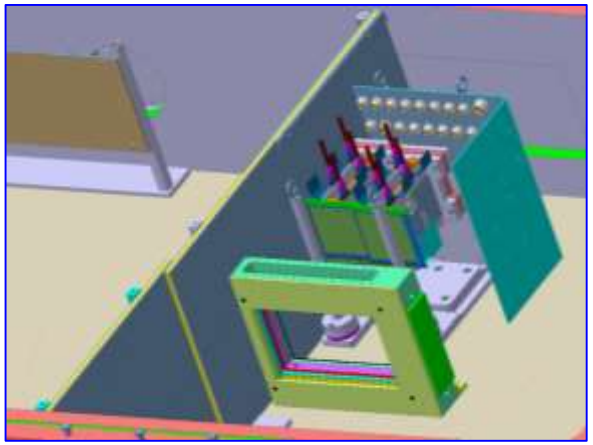


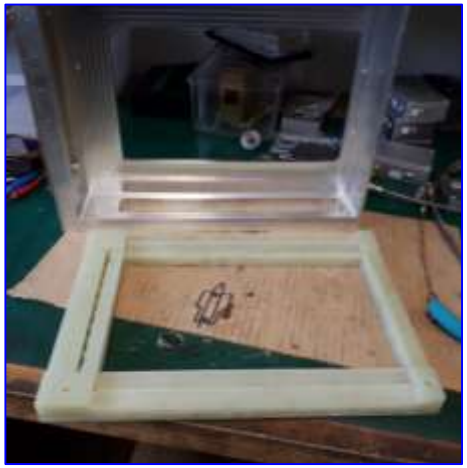
New MUSETT mechanics: ready, not yet assembled





Time-of flight detector :under completion







To do

- Beam dump, shields and masks : delivery November latest
- Source & masks translation

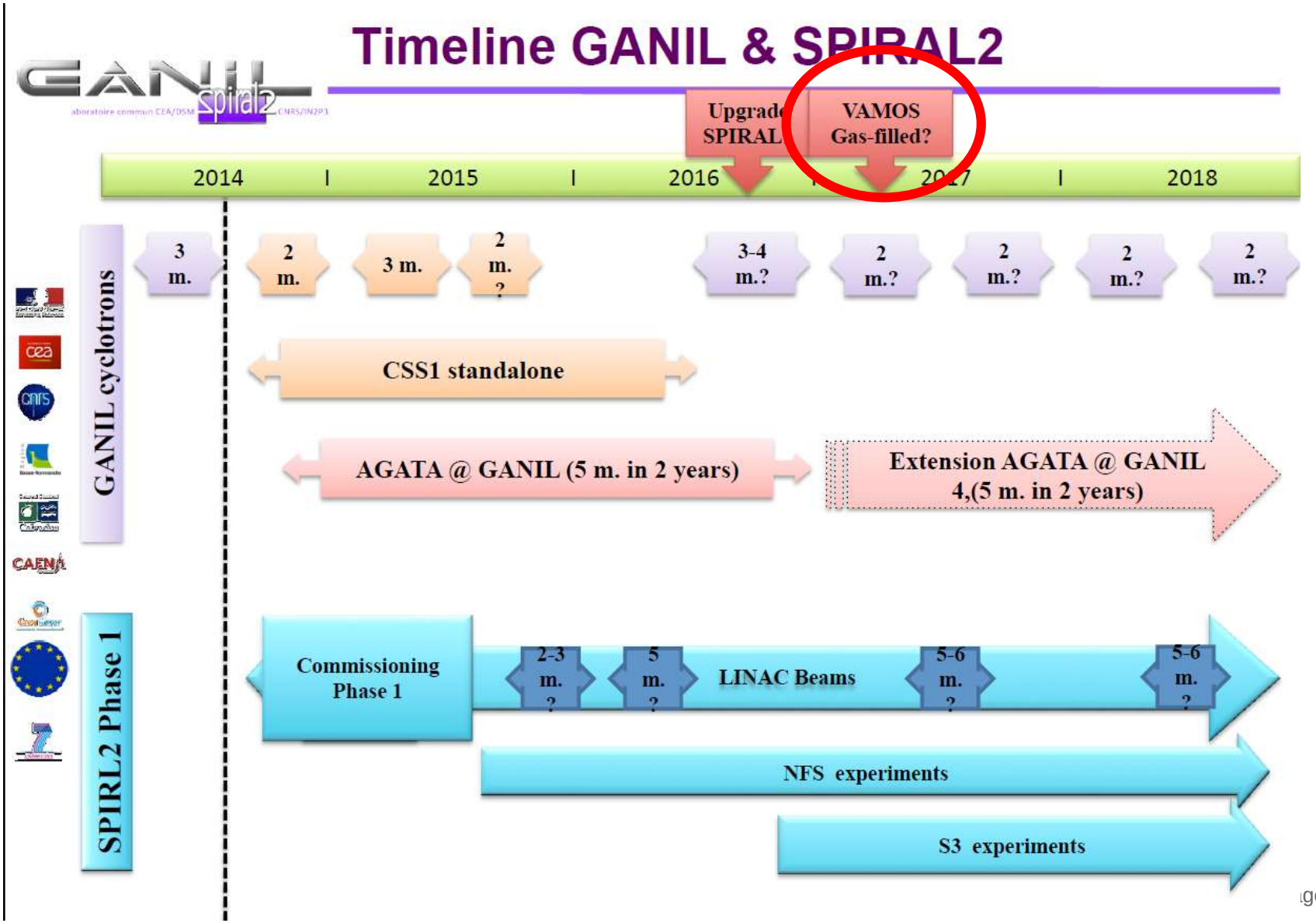


- MUSETT electronics test and EDAQ integration : started
  - No hurry to finalize yet what may need to evolve
- Control & Command
  - Can only be finalized during the installation

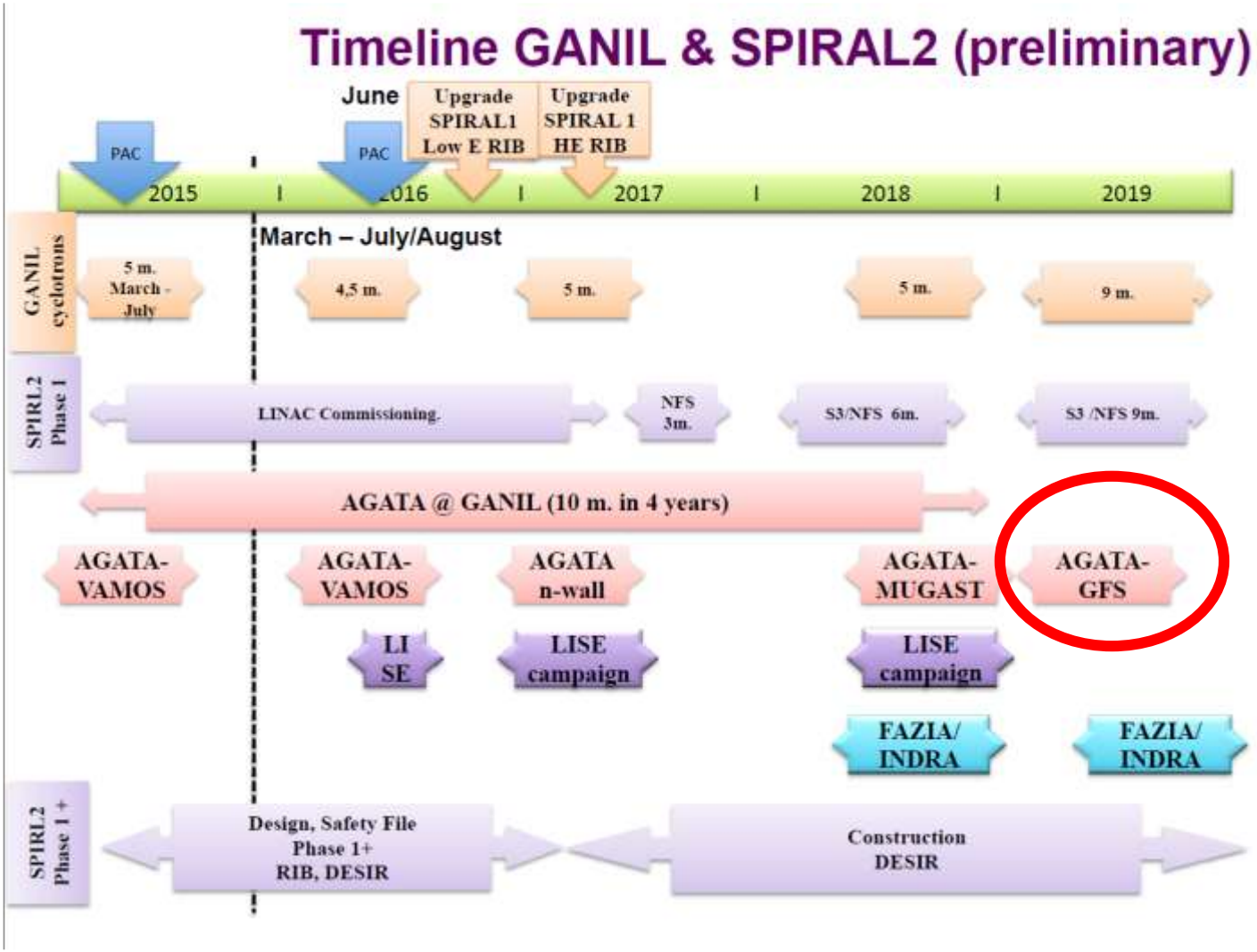
No pressure to complete the technical project until T0 is defined

VAMOS-GFS campaign : when ?

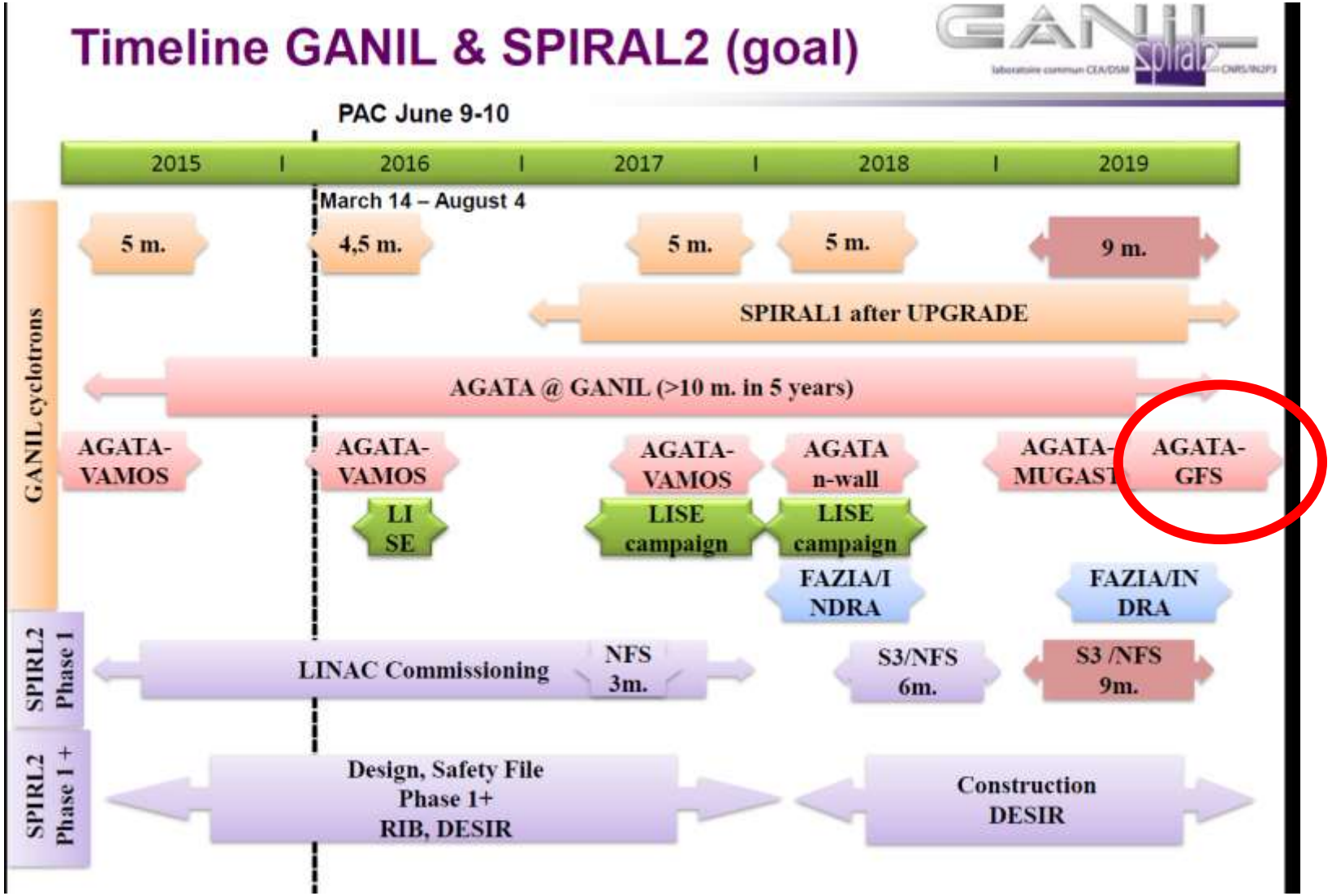
GANIL OPERATION VERSION 2014



GANIL OPERATION VERSION 2015



GANIL OPERATION VERSION 2016



CS GANIL 2018 01

"The SC considers that the VAMOS-gas filled mode with a 1π AGATA coverage is not unique and, taking the international competition into consideration, it is giving a lower priority to this program. At the same time, the SC considers the possibility to use deep inelastic reactions at or close to zero degree to investigate neutron-rich nuclei to be highly interesting and challenging. Hence, it encourages the collaboration to pursue related developments."

A VAMOS-GFS CAMPAIGN : WHEN AND HOW ?

2019 : MUGAST

2020 : a window of opportunity ?

Risks:

- Short time for commissioning / limited beam time at GANIL (x months in 2020 ?)
- Exact performances difficult to predict (for low cross-sections, symmetric reactions, inverse kinematics, etc.)
- Proposed experiments (LoI) are very challenging
- Commissioning + improving takes time; not plug and play experiments
  - It took years to reach the 10 nb limit at JYFL
  - AGFA

→ it is unrealistic to have only few days of commissioning and embark in challenging and risky experiments.

Consequences

- Difficult to keep engineers / technicians on track
  → Completing mechanics / detectors
  → Other parts of the project (EDAQ, C&C) are frozen
- Risk to evaporate physicists
- Attractiveness ?

Today there is no place in the world for the prompt spectroscopy of VHE/SHE

- RITU in standby
- AGFA in early phase

What's next ?

VAMOS-GFS CONTRIBUTORS

Mechanics: P. Girardot, A. Raut, Ph. Daniel-Thomas, P.Gangnant,
P. Contrepois, P. Graffin et al.

MUSETT : E. Monmarthe, B. Sulignano, Ch.T., M. Vandebrouck et al.

EDAQ : C. Houarner, L. Legeard, C. Maugeais, F.Saillant et al.

Gas detector : G. Frémont, M. Prieur et al.

Gas regulation and C-foils : G. Frémont, J. Goupil, Ch.T, M.Vandebrouck et al.

Vamos : J. Goupil, A. Giret, A. Lemasson et al.

AGATA : E. Clément, L. Menager, J. Ropert et al.

Silmulations & Optics : Ch.T, J. Sarén (JYFL), B. Jacquot, Ch. Schmitt

PLC : STP Ganil

Operation : Ch. T., M. Vandebrouck et al., Ganil

Coordinator : Ch. T.

Project management : P. Girardot (retired)

+ JYFL RITU team for help and advices

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