The Infrastructure Team

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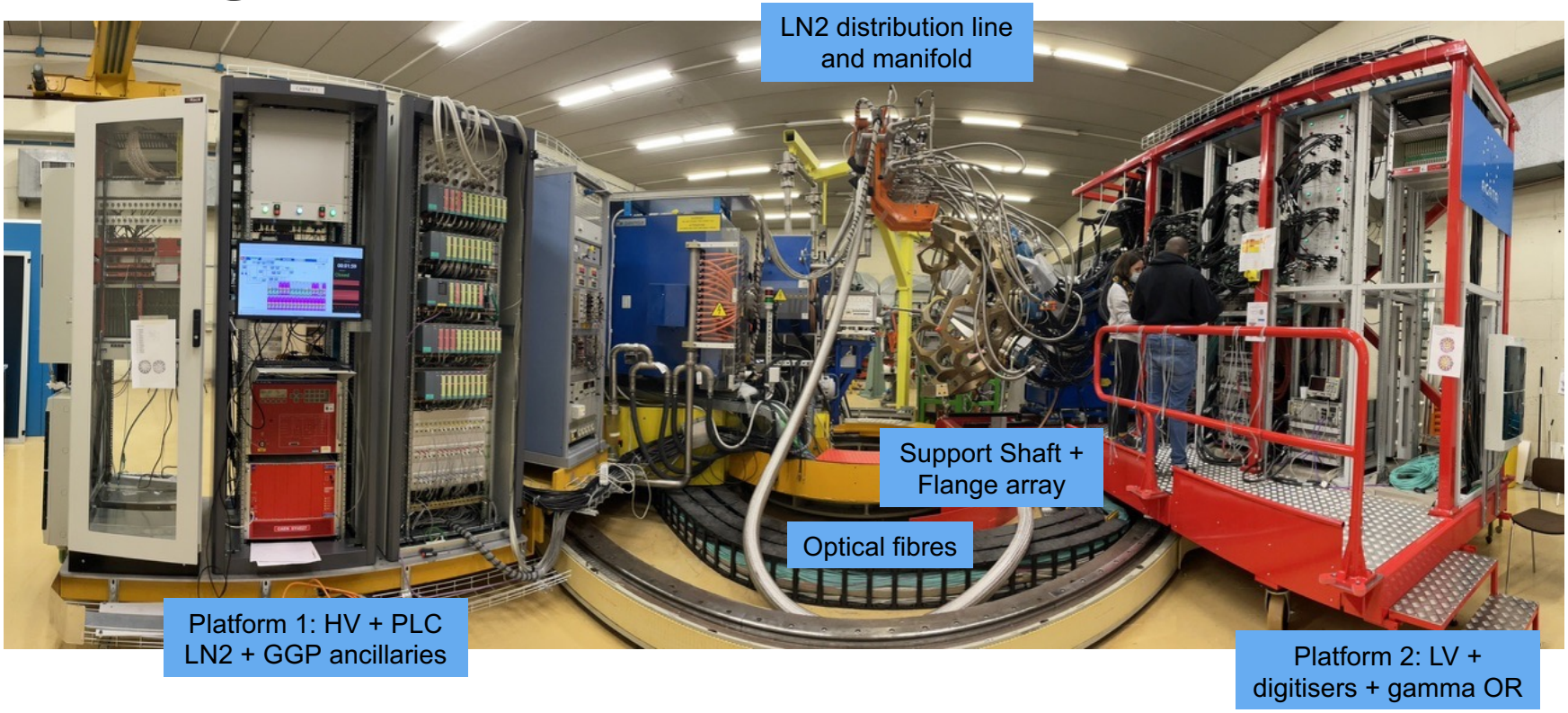
AGATA@LNL


LN2 distribution line and manifold
Support Shaft + Flange array
Optical fibres
Platform 1: HV + PLC LN2 + GGP ancillaries
Platform 2: LV + digitisers + gamma OR

DSS status

LN2 system, LVPS, HV system, …
- **No major issue occurred since last AGATA week**

Cables
- Few damaged LV cables. *Spares available*

LVPS
- **4 new systems available at LNL (32 LV channels)** + 1 maintenance system at CEA Saclay
- New Test tooling for LVPS first-level maintenance (local Diagnostic)
- Authorisation to **purchase obsolescent components** to complete 4π: *amplifiers for micropower instrumentation INA126P and fans for additional 4 groups*

HV system
- Purchased (UK) and installed **HV channels for 45 ATC** and returned borrowed HV boards to GALILEO and β-DS setups. Installed after Firmware upgrade

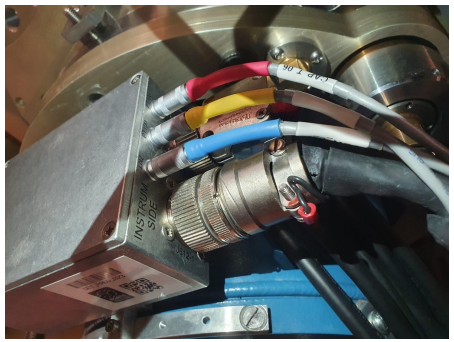
LV patch boxes
- Some units replaced after causing degraded detector performance
- **55 LV filters** (including 10 spares) required to complete the setup with 135 capsules (present MoU)

LVPS

NEW OLD

LVPS test box

NEW



LV cable

LN2 filling system

Identified issues and **adopted solutions**

- Low opening thresholds of cryostat venting/overpressure valves

Venting valves closed by plastic ties

- Fragile sealing of level capacitor feedthroughs

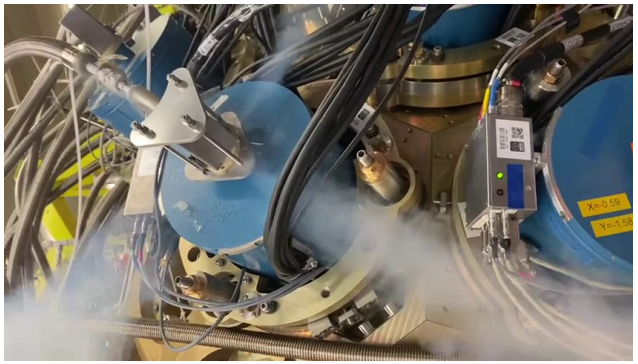
Not resolved yet

- Very thin bayonet O-ring

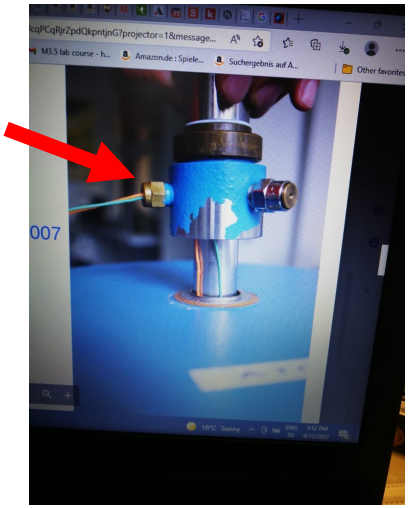
New peek adapter with additional O-ring

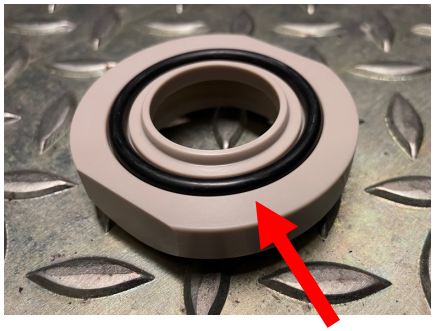
- Rigid metallic hoses

Added insert to reinforce bayonet connections and fixture holding bayonet and metallic hose in place

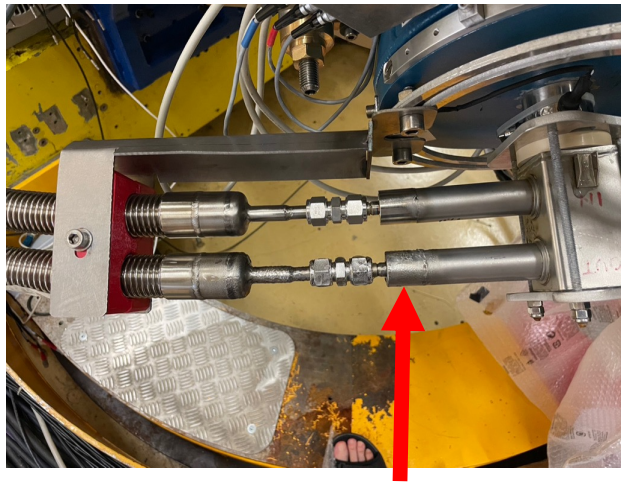


LN2 level feedthrough





Additional O-ring



Welded bayonet extension

Extra

Identified issues and **adopted solutions**

- Humidity
- Frequent HV shutdown

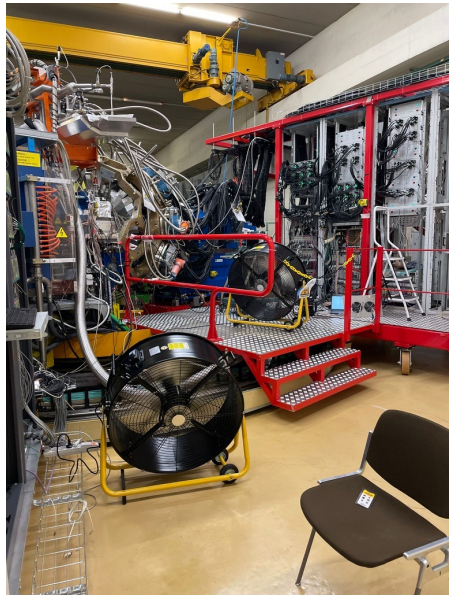
Additional isolation around the bayonets and improved air circulation

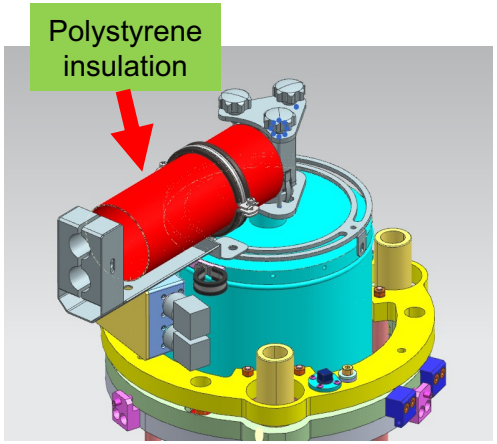
Periodic LN2 transfer line vacuum improvement

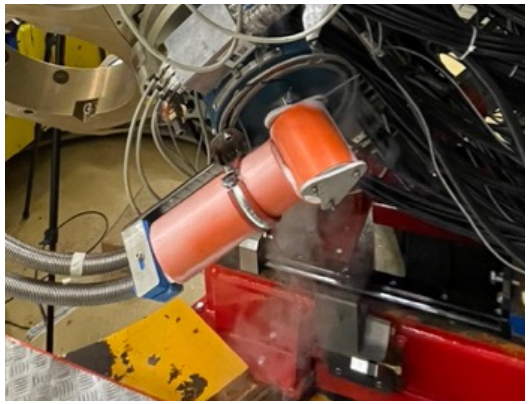
New firmware of CAEN HV boards with Ramp-down option after external disable

- Damaged digitizers from corrosion of Al plates and pipes

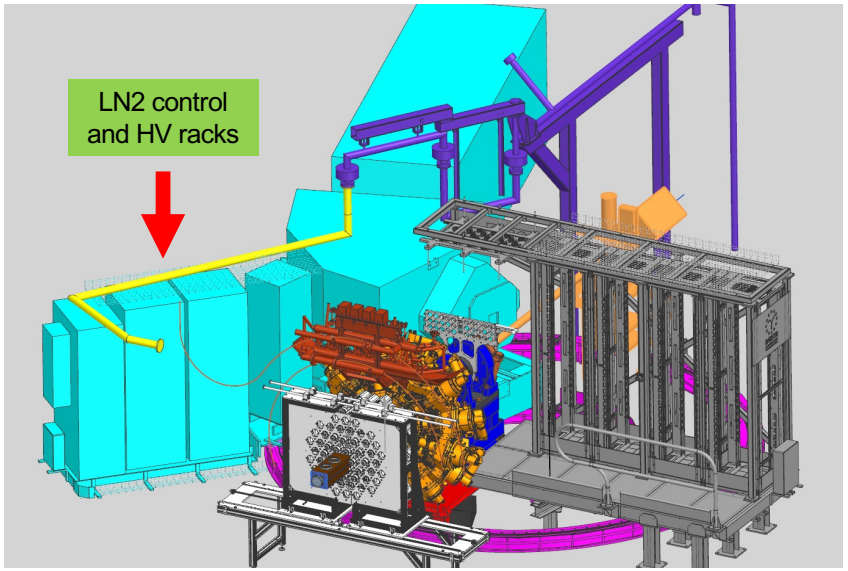
*Anodized aluminium components. Installed heat exchanger using "**non-corrosive**" cooling fluid*







LN2 distribution system at the zero-degrees position



Preserve current installation, new vacuum isolated tube and metallic hose, *slightly more expensive than alternative solution*

Easily restore the present configuration, less components to modify, more space to move the crane

No other changes are required*: cryogenic manifolds and LN2 distribution hardware, cabling, control system hardware (PLC) and software will be the same*

==> all elements have been purchased and ready to be installed

AGATA Project

EMC issues monitoring Plan

N. Karkour et al.

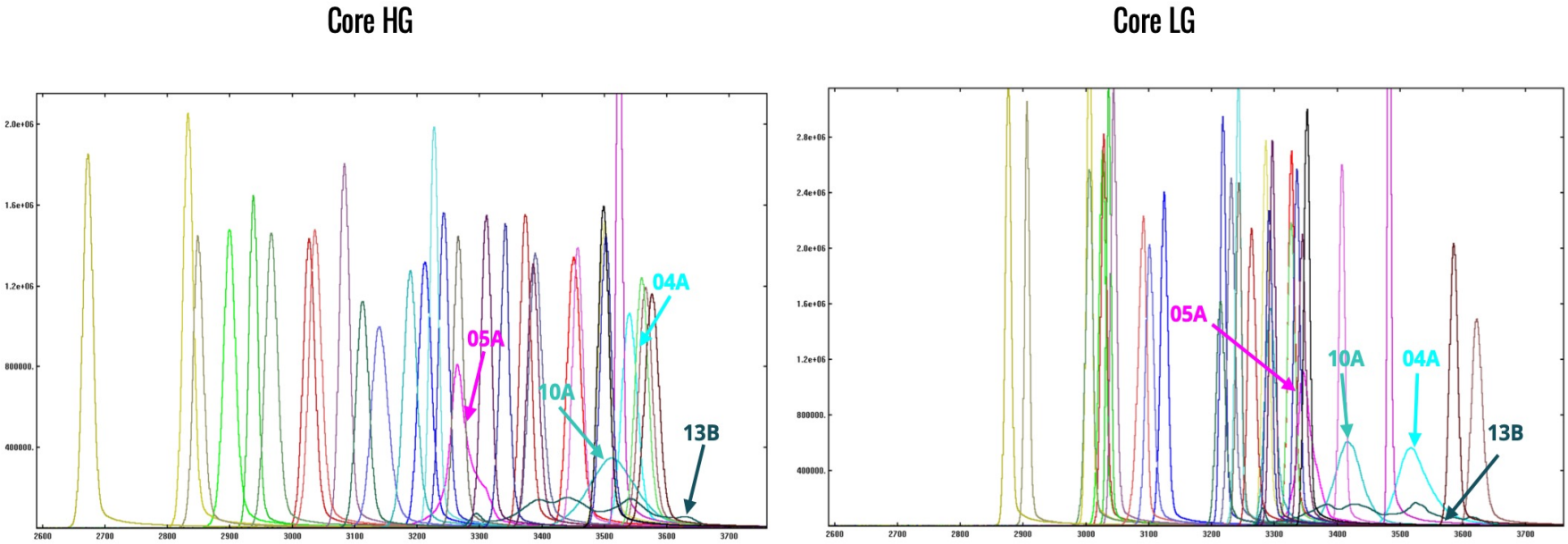


Figure 40 → Global Baseline Spectra of all Cores. 13B, 04A, 05A and 10A had the worst core resolutions.

EMC @ LNL January 2024

- **Noise origin** is not known sometimes and sometimes after changing different modules or cables things might work

- Using passive lemo spy board while MDR cable is disconnected is not good. Impedance matching issues, risk of damaging opamps while disconnecting the MDR cables

- AGATA is becoming huge and not easy to manipulate and diagnose either during experiments or in between experiments

EMC @ LNL January 2024

- Long-traces and Scope signal monitoring is crucial, as well as other parameters like LVPS or HVPS or other parameters to measure
- We must have an eye on each part of AGATA without touching the instrument
- Monitoring MUST be made physically on the signals and without generating noise
- We need detailed and synchronised monitoring of :
  - ✓ Low Voltage Power supply for Preamps;
  - ✓ High Voltage Power supply for detector biaising (Discussion started with CAEN);
  - ✓ ADC Long Traces and Preamplifier outputs;
  - ✓ Other parameters are needed (why peak shift for Co).
- Many answers could be hidden within experts long time qualification and experiences

EMC @ LNL January 2024

- Preamplifier signals must not be disconnected from the crates. ACTIVE spy modules to keep impedance matching is needed or analog inspection lines without disturbing the signal integrity since we are looking at few mV of noise
- ALL monitoring must be synchronised to check the LVPS, HVPS and Preamplifiers at the same time
- Long traces are needed (8, 16 ? ..)
- When more crystals are installed more random noise inspection will appear