Project Manager report

on- behalf of the AMB and the LNL/PD Local Team

ASC Meeting – April 2026

Project Status

AGATA: International Structure (April 2026)

AGATA Management Board and Teams
Phase 2

Project Manager / AMB Chairperson
Working Group Chairpersons, ASC Chairperson (M. Gorska) ACC Chairperson (JJ Valiente Dobon).
LPM-LNL, LPM-GSI, LPM-GANIL I. Kuti (Dissemination),
M. Zielinska (CEA), vice chair ASC

AMB Chairperson
Project Manager
E. Clément

Resource Manager
B. Million

Environmental Officer
R. Perez Vidal

AGATA Working Groups		AGATA Teams			
Detector Module H. Hess	Detector & Cryostat M.H. Sigward M. Zielinska	Detector CAT &Testing H. Boston	R & D on gamma Detectors & Applications D. Judson		
Front-end Electronics A.Gadea	Pre-Amplifier Digitizer A. Pullia	Pre-processing I. Lazarus	Global Trigger & Synchronization GANIL	Coupling To Ancillaries A. Giaz A. Goasduff	
Data Processing O. Stézowski	DAQ Infrastructure P. Lejeannic	Online/offline Interoperability G. Baulieu	DAQ Processing N. Dosme	Reprocessing & analysis Data Manager J. Dudouet	
Infrastructure B. Million	Detector array Infrastructure R. Menegazzo	Mechanical Infrastructure R. Smith	AGATA Array Database C. Aufranc		
PSA & Tracking R&D A. Boston	PSA Algorithm Development F. Holloway	Detector Characterisation A. Boston	Tracking Development A. Lopez-Martens		
Performance and Simulation M. Labiche	AGATA Performance R. Perez Vidal	AGATA Commissioning S. Bottoni/ F. Crespi	AGATA Simulation M. Labiche		

Local Project Managers (LPM)

INFN-LNL Legnaro A. Goasduff	FAIR Darmstadt K. Wimmer	GANIL-SPIRAL2 Caen C. Ciampi

M. Zielinska (CEA)
LNL Scientific Spokesperson

- The AMB meets every month by zoom
- Excellent stability and smooth evolutions of the board
- The last AGATA week was in GSI (15th-20th of September)
  https://indico.in2p3.fr/event/35264/overview 104 participants

Project Status

- The highest priority of the AMB remains the delivery of the V2 system from DIGIOPT12 → DCOD with Analysis pipe
- The firmware and the mass production itself are on the critical path
- The full integration is a milestone of 2026 → we need to organise
- The second priority is to support the LNL/PD local team in the switch from the « PRISMA » to the 0° campaign
- AGATA week in Warsaw in September
  https://indico.in2p3.fr/event/37746/overview

The Short Phase 2 Project Status

Capsule Total funded 2025]= 57 + 24 = 80 capsules (inc. DEGAS)
2026 Proposal : 2x GANIL, 1x IN2P3, 1x CEA, 2x INFN, 1x Spain, = 7
+ D-AGATA (3x)

_____ 90 capsules (2π)

Mechanics and infrastructure : The 2π solid angle is covered and installed at LNL

all V2 2π (90 channels) items are funded and in production according to the TDR milestone

Funds are secured at IJClab for the IT infrastructure

Our bottlenecks are

- The firmware delivery with high delays
  - The data integrity has been validated, PSA to be verified (INFN, ZeptoNova, IFIC, Ip2i, IJClab)
  - GTS integration 90% completed (INFN, ZeptoNova, IFIC, GANIL)

- Unexpected production issues for the PACE boards and long delivery time for some connectors, cables

Our strategy is to put maximum effort (Alain, Andres) to follow closely the ZeptoNova work and to follow in details the procurement planning (Bénédicte, Andres, Nabil)

Detector status (March 2026)

Detector procurement

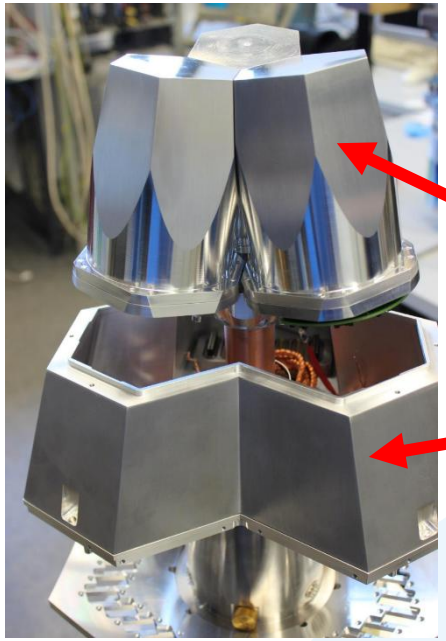
The total number of delivered AGATA asym-capsules is **76**
+ 1 DEGAS ATC completed in IKP
+ 1 ORTEC prototype, not functional
+ 3 symmetric capsules

Open Orders: 1 capsule

- 1 x Owner (Italy) delivery expected in summer 2026

Capsule Total funded 2025]= 57 + 24 = 80 capsules
2026 Proposal : 2x GANIL, 1x IN2P3, 1x CEA, 2x INFN, 1x Spain, = 7
+ **D-AGATA (3x) on OC (hosted at GANIL) after ASC agreed → two crystals already delivered, 1 at MIRION**

90 capsules (2π)



3 x encapsulated HPGe crystal from MIRION®

1 x cryostat from CTT®

AGATA Triple Cluster (ATC)

Cryostat procurement and Cluster Assembly

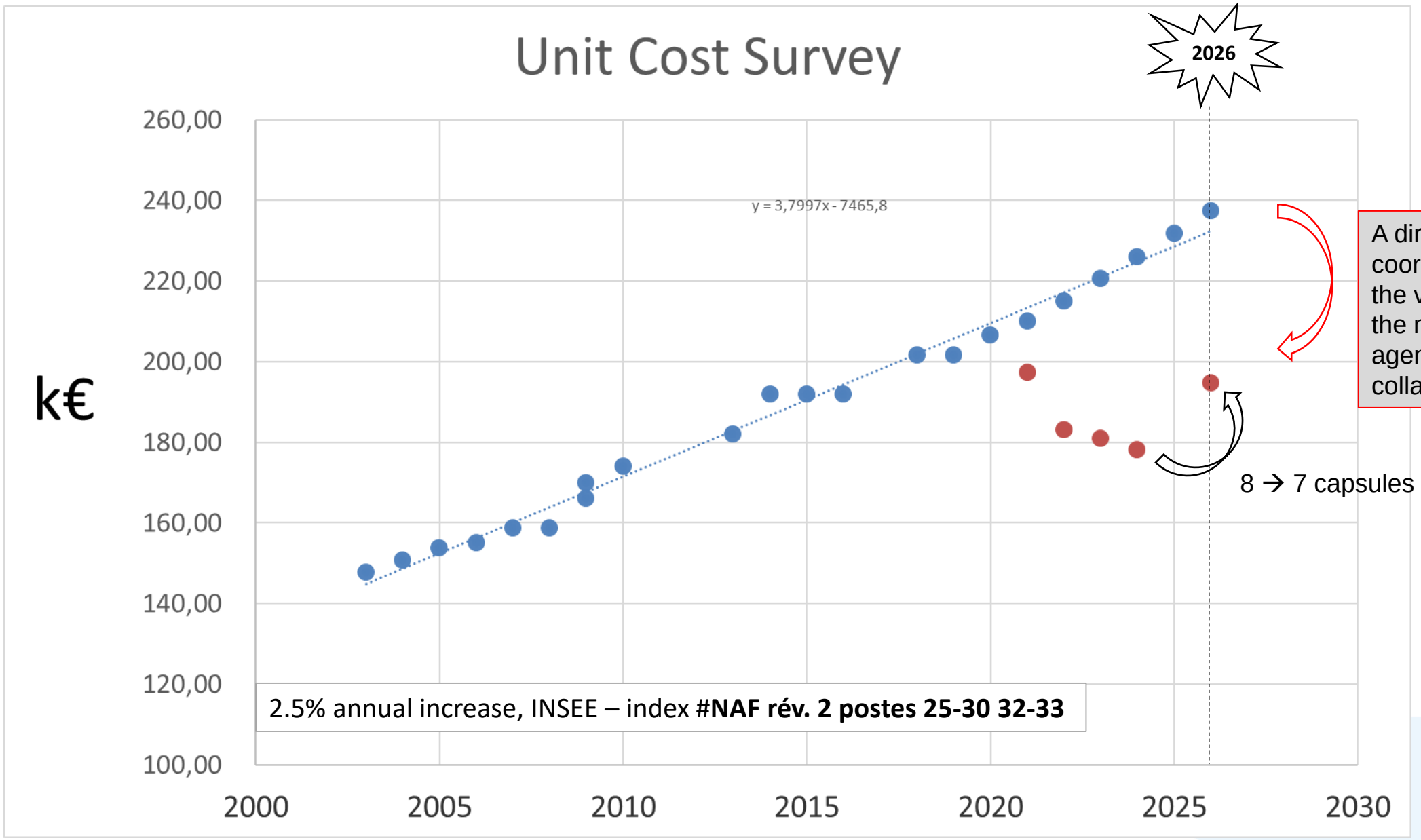
ATC24 (GSI) delivered
ATC25 (GANIL) in progress
ATC16 (conversion of ADC03 - GANIL): completed
Test cryostats refurbishment done
2025-2026 : 4 new cryostats ordered at CTT

MIRION annual meeting January 21st 2026

2026 AGATA prices Vs quantity with a 2.5% price increase (vs. 2025)

Quantity	Quantity Discount	2026 Unit AGATA detector price per quantity	2026 Unit AGATA detector check price per quantity	2026 Unit AGATA detector annealing price per quantity	2026 Unit AGATA detector repair price per quantity
1	0%	237 463 €	3 050 €	9 033 €	60 129 €
2	3%	230 339 €	2 959 €	8 763 €	58 325 €
3	6%	223 215 €	2 867 €	8 491 €	56 521 €
4	9%	216 091 €	2 776 €	8 221 €	54 717 €
5	12%	208 967 €	2 684 €	7 949 €	52 914 €
6	15%	201 843 €	2 593 €	7 678 €	51 110 €
7	18%	194 719 €	2 501 €	7 408 €	49 306 €
8	21%	187 596 €	2 410 €	7 136 €	47 502 €
9	24%	180 472 €	2 319 €	6 865 €	45 698 €
10	27%	173 348 €	2 226 €	6 594 €	43 894 €
11	30%	166 224 €	2 135 €	6 323 €	42 090 €
12	33%	159 100 €	2 044 €	6 053 €	40 287 €
13	33%	159 100 €	2 044 €	6 053 €	40 287 €
14	33%	159 100 €	2 044 €	6 053 €	40 287 €
15	33%	159 100 €	2 044 €	6 053 €	40 287 €

MIRION annual meeting January 21st 2026



MIRION annual meeting January 21st 2026

Major progress on the CTT to Mirion transfer
The 2025 – 2026 orders are still CTT but the next will be to MIRION
The D-AGATA cryostat upgrade will CTT-MIRIOn joined work
We finally secured the cryostat procurement for the long term !
The MIRION cryostat needs to be cost-evaluated

A subject to be treated in the AMB is how the WG will evolve knowing this change of paradigm

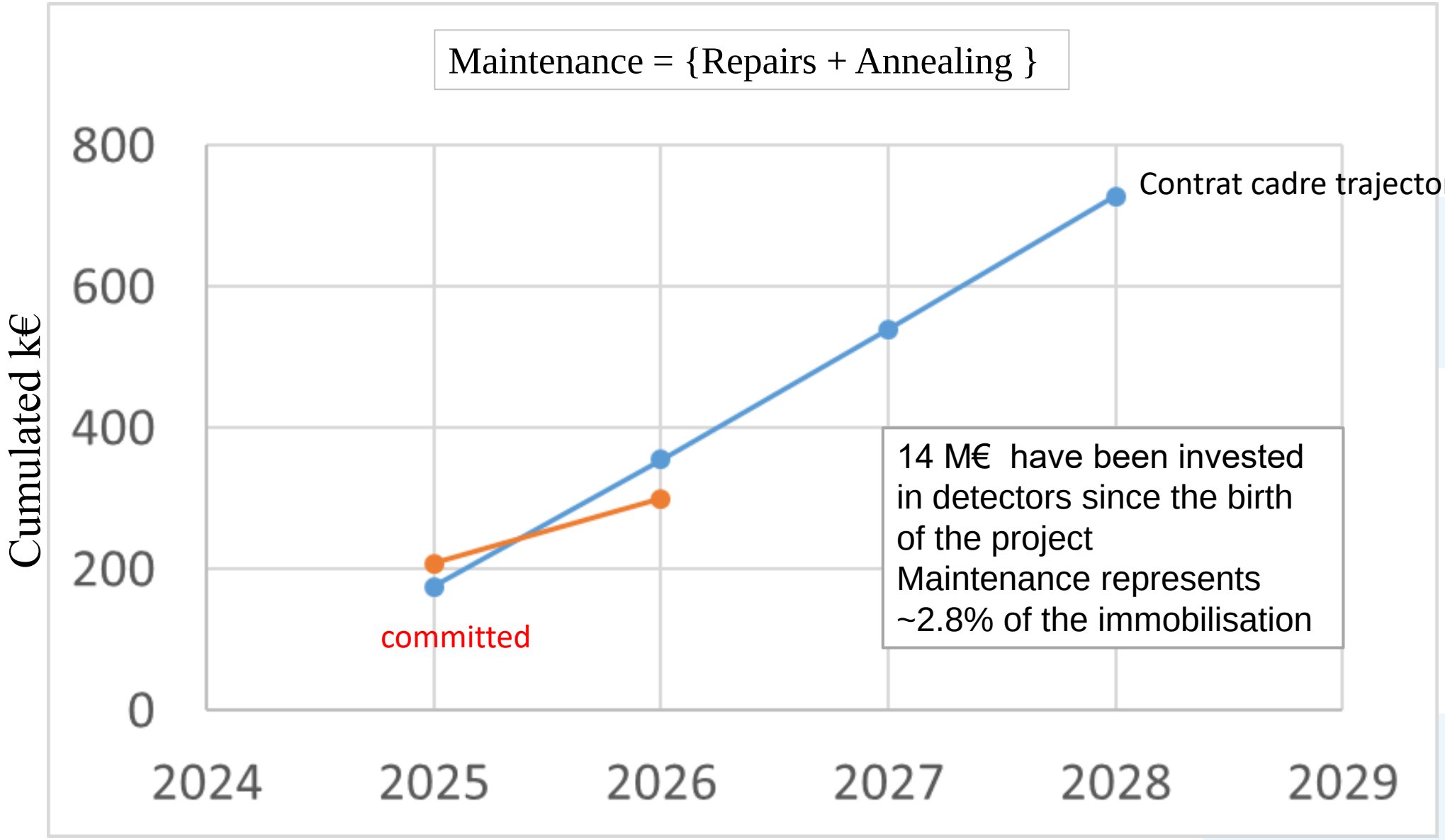
→ The integrated cost of an ATC is to be re-evaluated after summer 2026 see Bénédicte's report for the present evaluation

Germanium

- 80% of refined Ge production worldwide is from China
- China is applying export restriction on HPGe
- +400% increase in metal Ge pricing from 2023 to sept 25 and increasing trend
- Legacy MIRION Ge supplies are NOT from chinese sourcing but Ge overall market is affected
- No effect of AGATA price for 2026, more to come in 2027

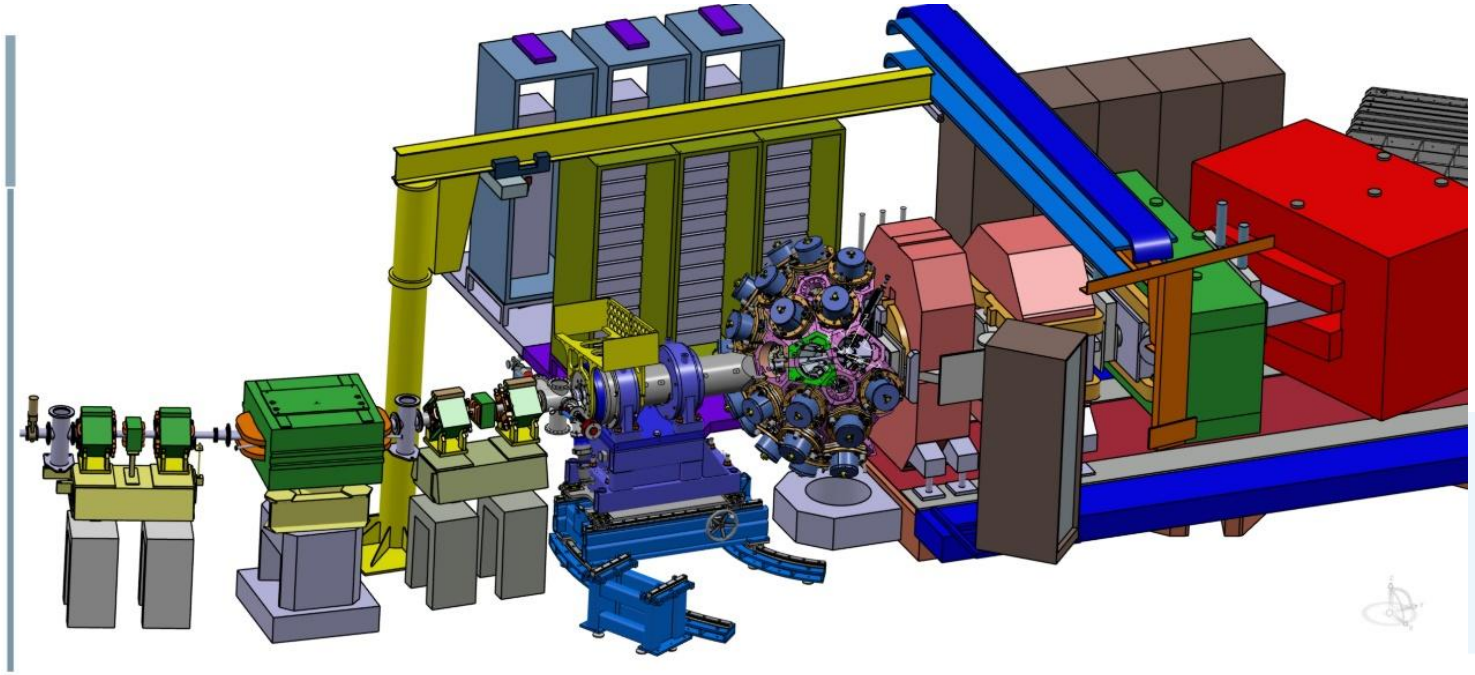
Maintenance

A 4 years contract (1.6 M€, inc 2 new GANIL capsules) between GANIL and MIRION for new orders/ annealing / repairs has been signed using the CORE and OC (common account) located in the GANIL. → Faster orders



Infrastructures

Mechanics (STFC, LNL, GANIL) :
Preparation to the GANIL campaign

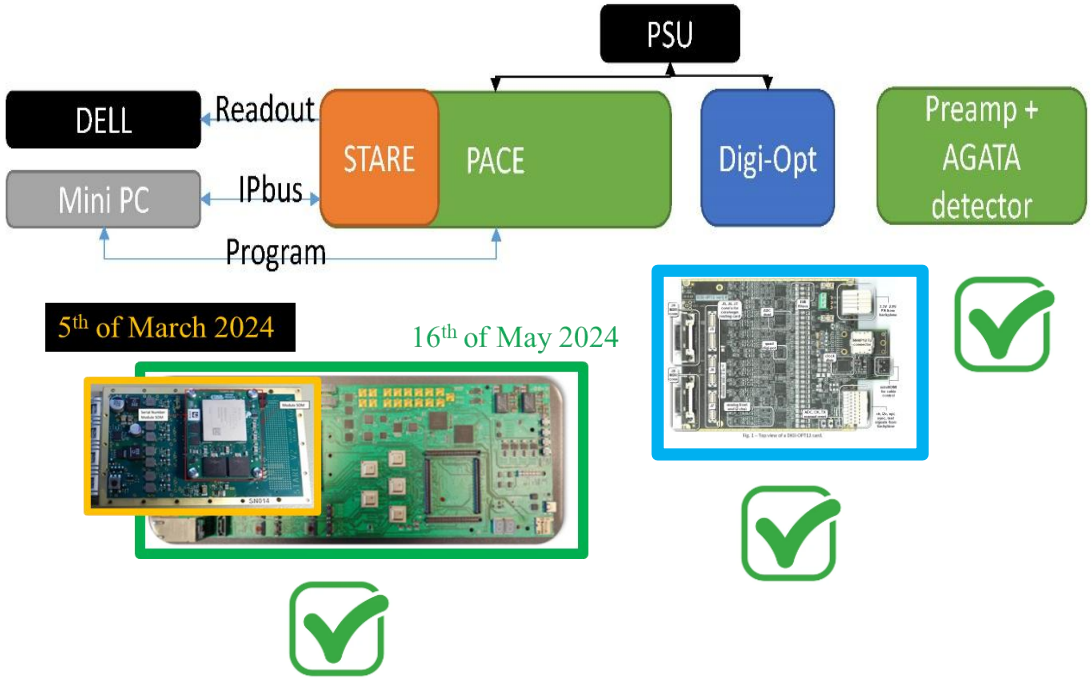


Detector Support System (CEA)

- ✓ Phase 2 LVPS designed (CEA) and 2π delivered, operational at LNL; Component for 4π secured (ordered)
- ✓ HV replacement funded. Done.
- ✓ LN2 system for phase 2 designed (CEA), delivered and operation at LNL. New batch of PatchBox and LN2 cards in 2026
- ✓ Design of the mechanical support completed, 2π delivered (STFC). Spare part to be ordered in 2025 on OC
- ✓ Already detailed discussions for the installation at GANIL in 2028

AGATA
ADVANCED GAMMA TRACKING ARRAY

Phase 2 FEBEE ; evaluation status

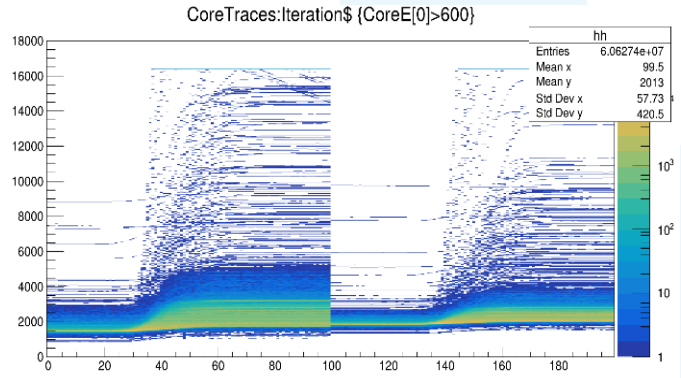


- The most challenging R&D of phase 2
- The critical path is the integration at the firmware level in the existing system (GTS, network, flow, RUDP etc…) due to human resource availability
- We are late but not stuck

- DIGOPT mass production is on time v3.7.1 (100% production yield)
- mass production of PACE and STARE on-going
- All SoM have been secured by AMB for the 3π (GANIL Order 2025)
  → Delivered in January 2026
- Test Trigger Processor GTS-GANIL went OK-
- SMART test completed at GANIL in T1 2026. Now moving to the Trigger board encoder/decoder
- ~90 x complete chains are now ordered and to be delivered by 2026
- Integration work to coupled with phase 1 (> 100 channels)

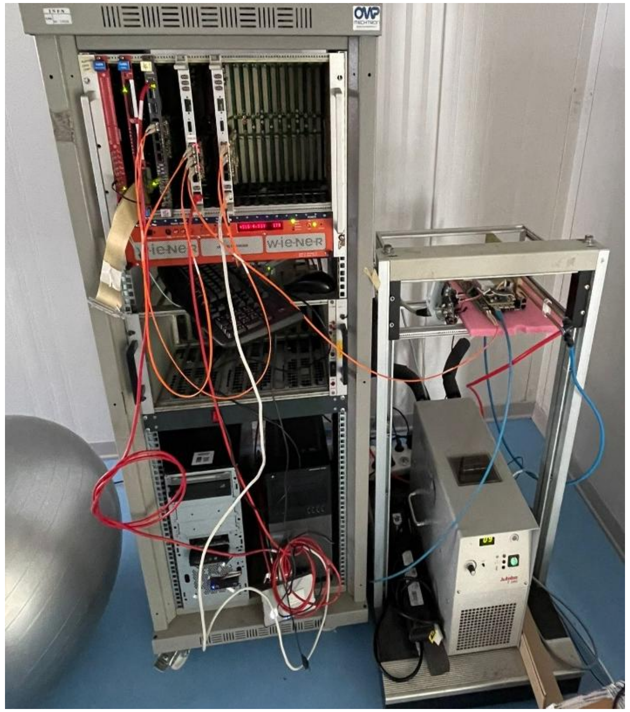
- 1 test bench in IFIC, 1 test benches in LNL and 2 test benches in Orsay (STARE, Daq, soon STARE→DAQ)

- SLC – Monitoring great progress
- Firmware : data formatting solved and delivered
- Firmware : GTS → progresses in the last weeks



Data integrity checked

Phase 2 FEBEE ; evaluation status

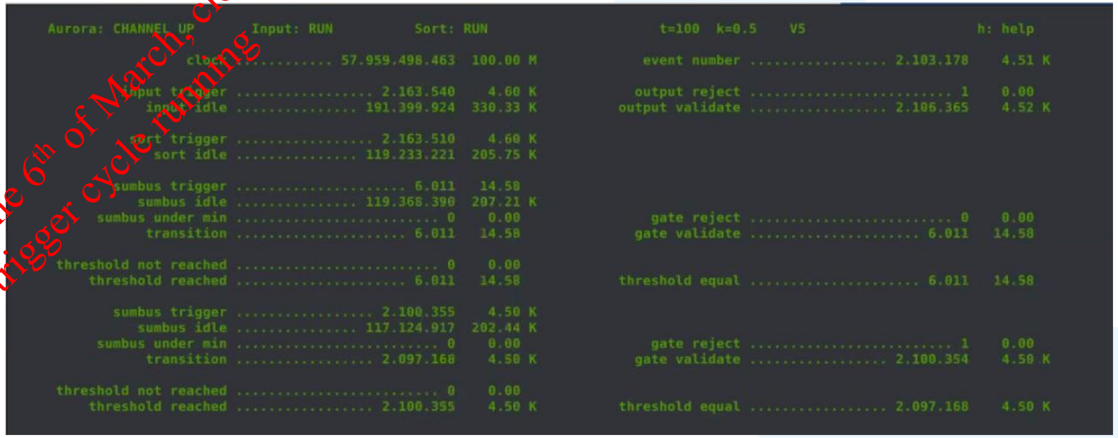


Zeptonova 2025 contract completed and deliverable report sent to GANIL.
Documentation available now at: https://pacedocumentation-6e73de.pages.in2p3.fr/.
and the different version of the firmware developed are stored at:
https://gitlab.in2p3.fr/agata/daq/pace-bitestreams

New short contract started with GANIL with few urgent tasks, mainly related with the GTS integration, namely:

1. Maintenance of AGATA Ph2 PACE GTS to Trigger processor communication for Ph2 Firmware.
2. Maintenance and verification of the GTS fine delay measurement.
3. Maintenance and verification of the External Trigger signal for PACE Board and global time synchronization.

Since the 6th of March, clock and trigger cycle running



Phase 2 FEBEE ; Mass production

DIGIOPT12 v3.6, v3.7 and v3.7.1: delivered 90 core boards and 270 segment board,

STARE hardware: 64 production boards + 10 pre-production boards are ready and 77 SoMs already available for completing up to 135 STARES + spares.

Ordered 64 STARE SoMs TE0841-03-41I31-A (INFN + GANIL) delivered on 2nd week of January 2026.
Expected to have >=87 STARES by the end of the year.

PACE hardware: first 90 boards, including 33 repaired exchanging the wrong voltage regulator, are built. Test system operational at the company since June and supporting all TE0808 SoM versions
All TE0808-05-BBE81-E ordered by INFN were delivered on 3rd December 2025 GANIL purchased 50 TE0808-05-BBE81-E delivered mid February 2026. Order for the 50 remaining PACE boards will be placed by INFN using 2025 funds.

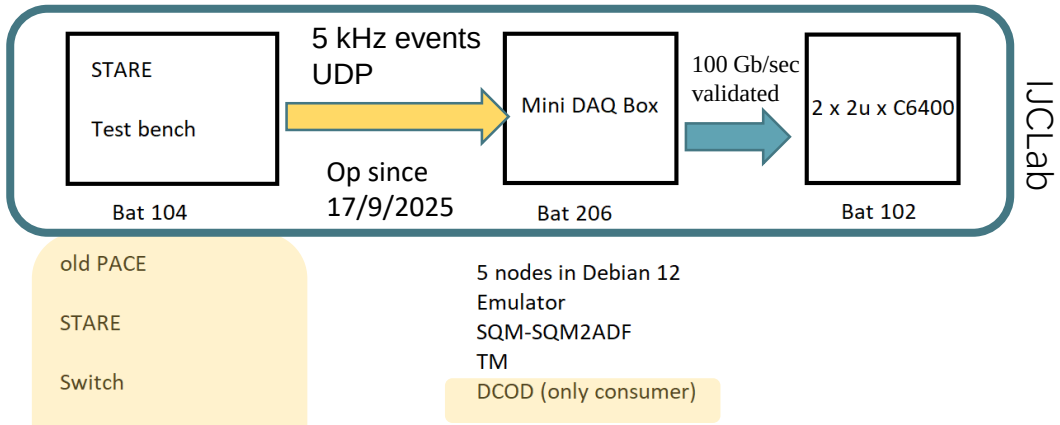
PSU and backplanes: 50 PSUv2.5existing since end of June, minor modification to gain stability ongoing. Purchasing order for 30 units to be placed by INFN on 2025 funds and 30 more already ordered on O.C. existing at GANIL. A total of 110 PSU will be existing early 2026. Power backplane: 77 units existing and Signal backplane: 85 units existing.
Ongoing order by GANIL of 70 power backplane and 60 Signal backplanes, on core and O.C. by GANIL, to complete the production including spare

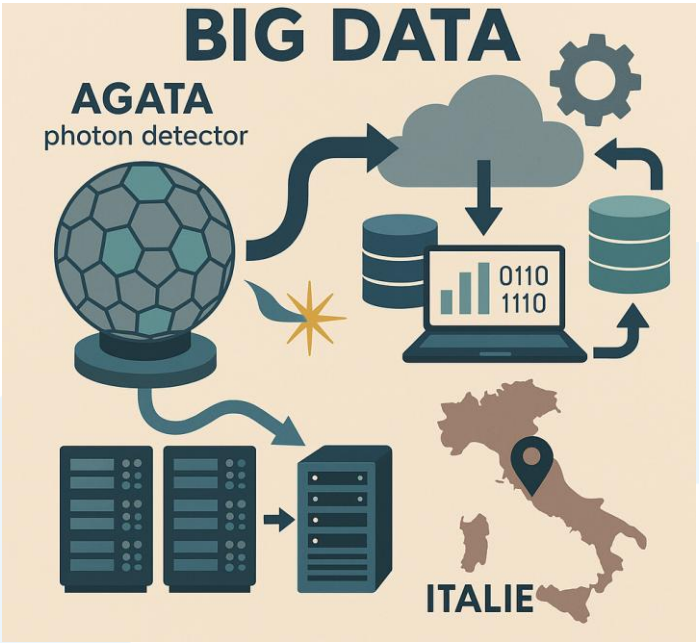
Mechanics: 90 Units in production to cover the need on IFIC, INFN and GANIL funds

Hardware mass production and firmware deliveries are now (unfortunately) aligned in time

Data flow and Acquisition status

- The processing of few tens of emulated crystals are being tested
  - At high/low rates, possibly including new PSA/Tracking
  - **The data transfer through the UDP (RUDP) protocol should be mastered to avoid loss**
- Advanced data & metadata management tools (solutions such as ami/rucio) will be tested





Configurations tested: Three configurations were evaluated, each comprising 14 to 18 links (Stare and emulators) operating at frequencies of 5 kHz, 10 kHz, and 20 kHz. (Today we run at ~2 – 3 kHz/core max).

The 5 kHz tests proved stable once incorrectly initialised links had been corrected, whereas the 20 kHz tests exhibited persistent packet loss.

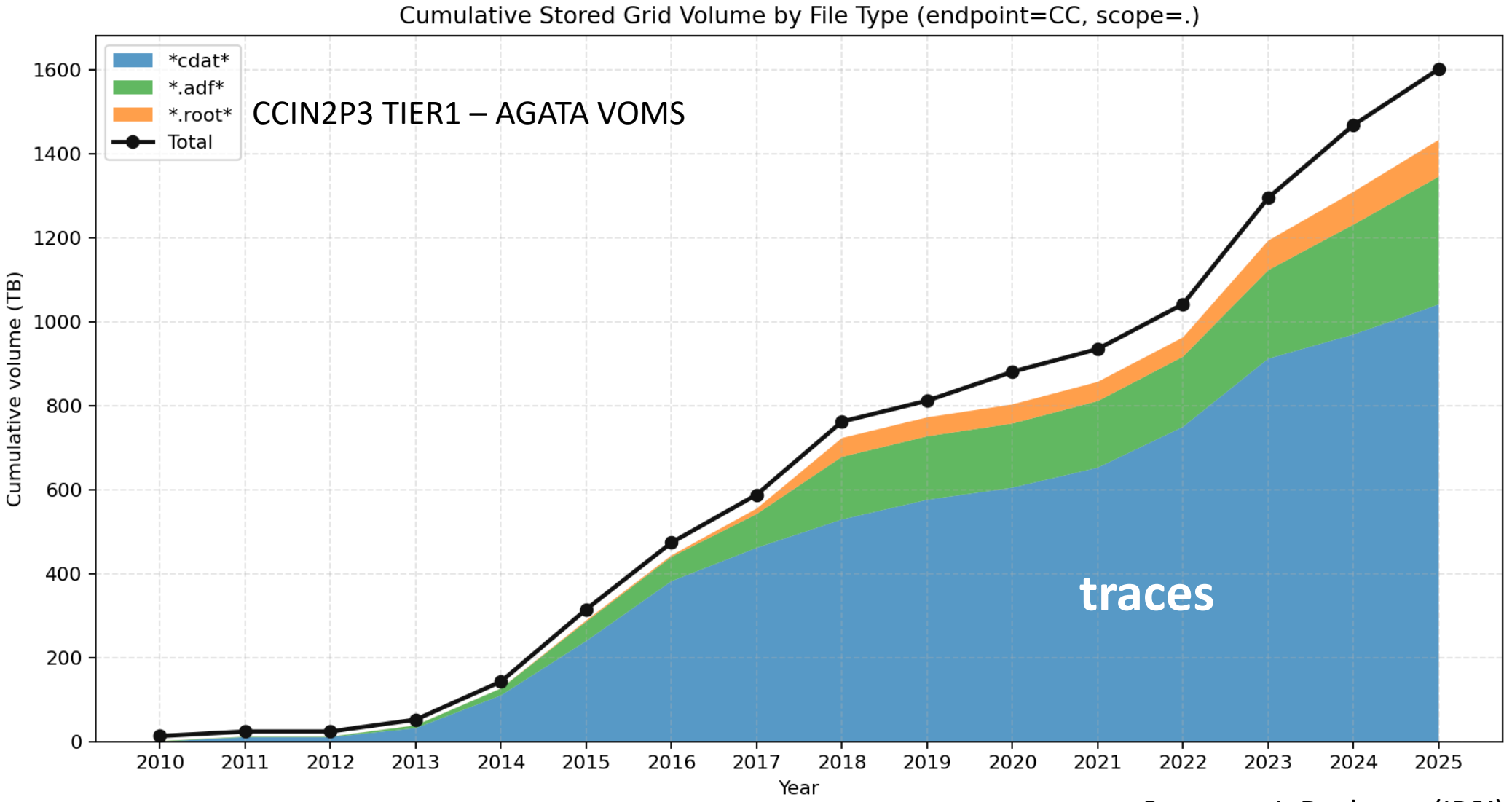
Next steps:

o Two days of final testing at the IJCLab (23–24 March) validated the configurations.

o Objectives were: to run endurance tests (> 12–24 hours) with 14 to 18 Stare links + 8 emulator links (simulating 22 to 26 crystals).

→ **No need to develop the RUDP firmware**

AGATA DATA- Refining our data management



« metadata »

Analyzed

Processed

MySQL data base extracted from GRID – completed (2026)
→ AGATA Data catalogue

Courtesy J. Dudouet (IP2i)

PSA-Tracking R&D ; status

Machine learning is a game changer

Neural Networks for 3D Characterization of AGATA Crystals

Mojahed Abushawish , Guillaume Baulieu , Jérémie Dudouet , Olivier Stézowski

Eur.Phys.J.A, 2026, 62 (2), pp.27. ⟨10.1140/epja/s10050-026-01793-9⟩

Article dans une revue hal-05208731v1

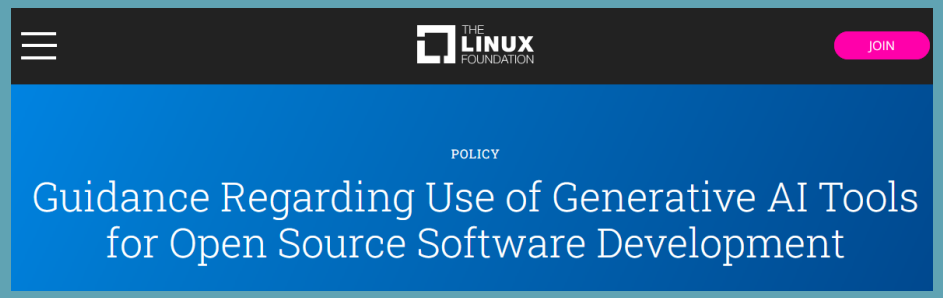
Report on the A601 neutron test. Kept delayed due to Birmingham technical difficulties. Postpone for spring –summer.

IPHC scanning table:

In 2025, A005 was fully scanned and analysed (see AGATA week);
B003 scan completed late 2025, data are in Lyon and the new PD is learning the code to process the neural network.
C016 scan is starting (2026).
At the end, A,B,C scan will be done.

Next June, annual A.I meeting organized by J. Ljungvall (IPHC) (on-line).

A question we will be asking ourselves is how AGATA Software team will manage the influx of AI-generated “toolkits”, “software analyses” and “alternative PSAs” produced by our PhD and postdoc researchers. We probably need a guideline as the “linux fundation” has defined



AGATAGeFEM

Since the AD phase, the PSA is based on the ADL code to general the reference basis

No upgrade since a decade

The AGATAGeFEM code developed by J. Ljungvall is giving better results now.

We initiated an evaluation work to switch « officially » to this software ; expected gains in PSA and Tracking, so resolving power.

Performances and Simulation

The A005 tomography scan done at Strasbourg has been translated in GDML format to be included into the GEANT4 of AGATA.
Simulation runs to be performed and compared to the original description and data.

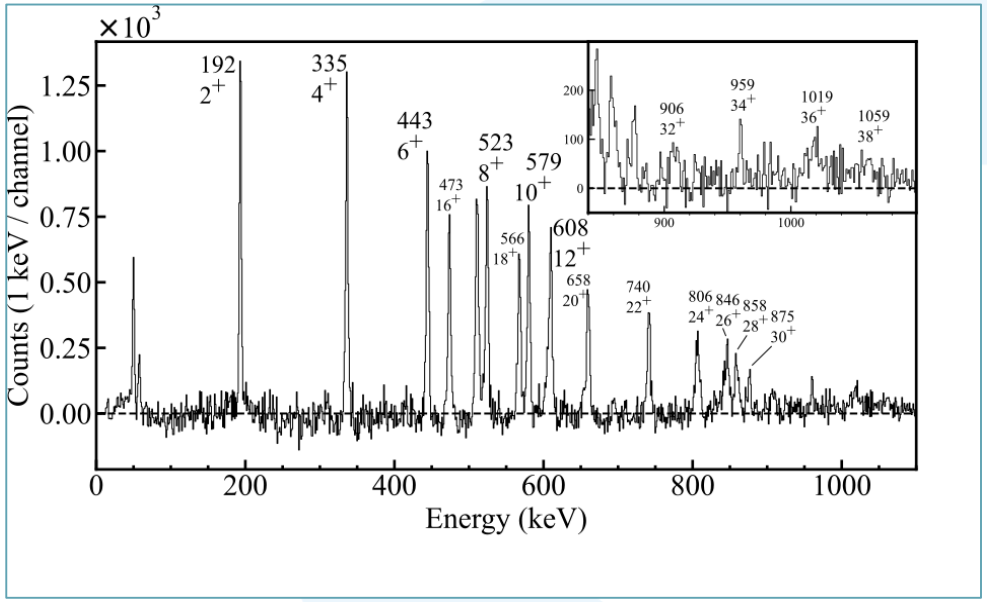
There is an on-going work on the survey of the gain stability in the digitizers versus the infrastructure data (LN2 refill and LVPS).

High Energy.

Summary

- **Average FWHM resolution at 1.3MeV (before/after correction neutron damage correction):**
  - Core: ~4,6 keV ➡ ~3,3 keV
  - Sum Seg.: ~13,4keV ➡ ~ 5,8 keV
- **24h measurement 60Co to investigate**
  - **Energy drifts and LN2 filling**
    - **Pos 0, 1, 6,13,14:** most-affected detectors at 1.3MeV
    - **07B, 05C:** no clear correlation with the jumps
  - **PSA issues and LV current**
    - **08A:** no clear correlation
    - **10C:** correlation
    - **(01B):** not enough stats
- **Future perspectives:**
  - checks in-beam data
  - checks Sum Segs
  - checks baselines
  - checks monitoring LV current preamp

High multiplicity.



Simulation WG:

Documentation update on-going.
Simulation of the LISA (Lifetime measurement with Solid Active targets) device is being implemented – Wiktor Poklepa (post-doc at GSI)
0° GDML file implemented

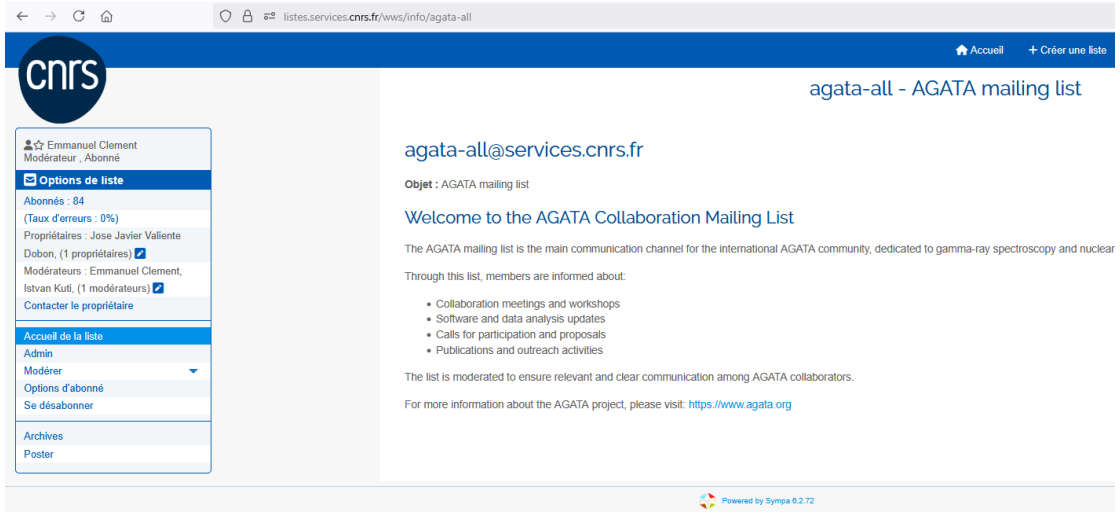
Dissemination

The agata.org web site is maintained up-to-date by ATOMKI.

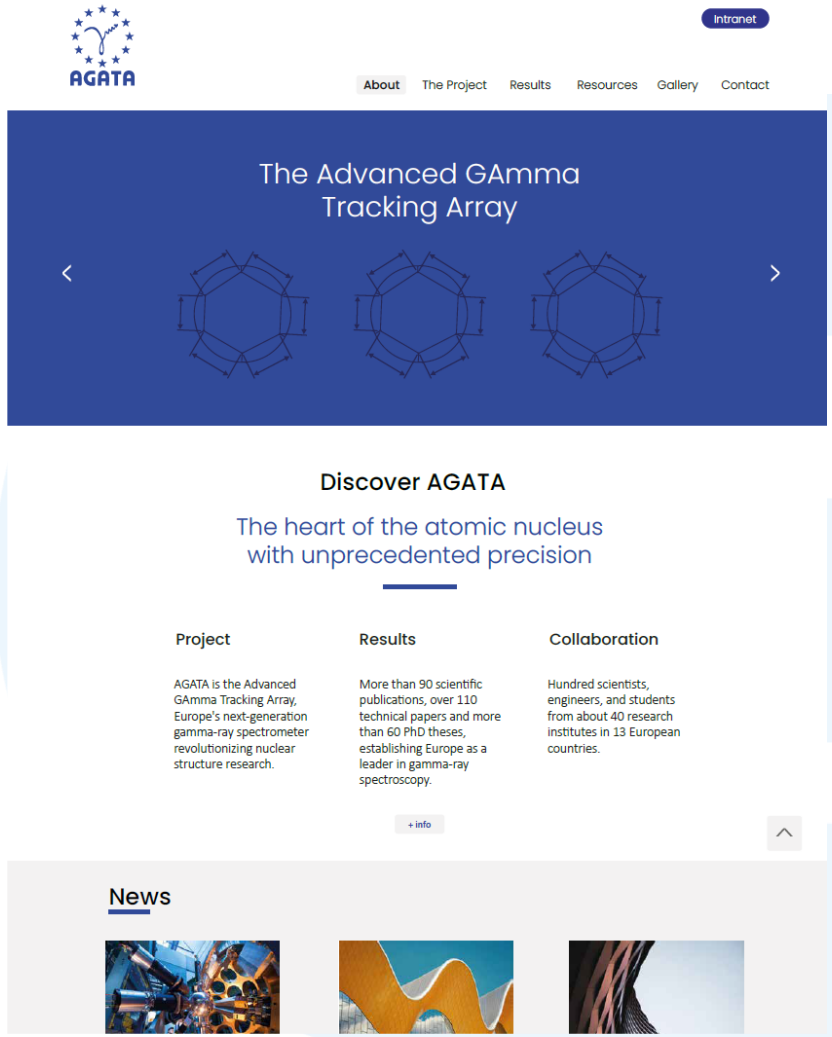
However the system is obsolete and impossible to manage : the AMB agreed on the 12th of November to start the migration to new industrial system
→ cost to be covered by OC hosted at GANIL (4.2 k€)

I. Kuti (ATOMKI) and J.J Valiente Dobon (IFIC) are in charge

The historical gsi mailing list (agata_all) which cannot be managed properly anymore has been replaced by the new system (138 registered March 2026)

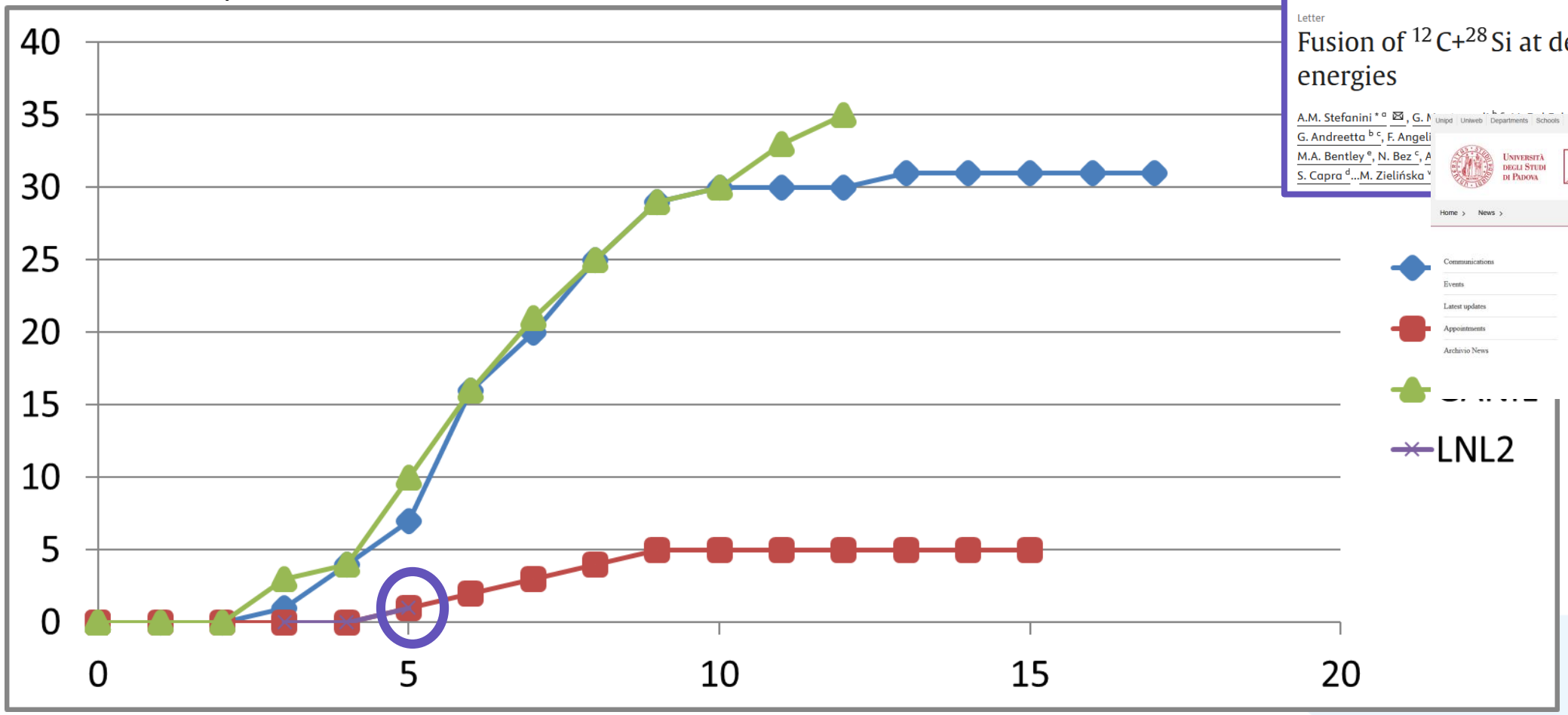


https://agata.globalcomunica.com/ (temporary)



Dissemination

March 2026 updated



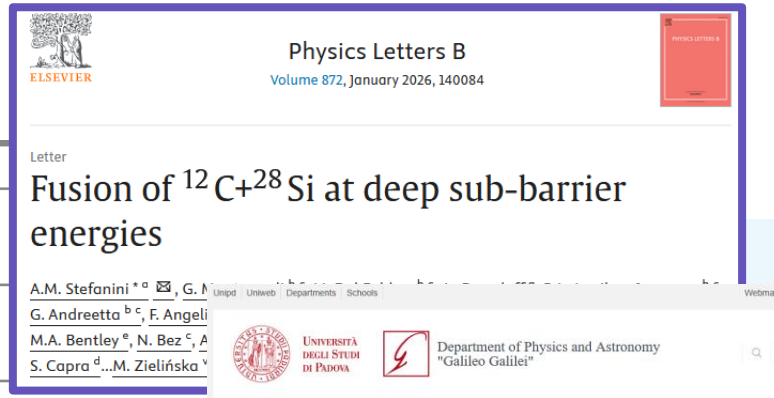
First Observation of Multiphonon γ-Vibrations in an Odd-Odd Nuclear System

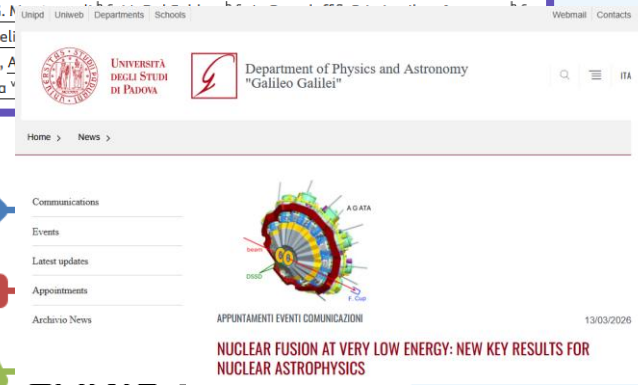
E. H. Wang [1,2,3,*], M. Abushawish [4], J. H. Hamilton [3], A. Navin [5,†], S. Bhattacharyya [6,7], J. Dudouet [4], G. H. Bhat [8], J. A. Sheikh [9,10], S. Jehangir [11] *et al.*

Show more

Phys. Rev. Lett. **136**, 072501 – **Published 18 February, 2026**

DOI: https://doi.org/10.1103/1gy6-v3sb





https://in2p3.hal.science/AGATA/

Dissemination

HISTORY AND CULTURE

Eiffel honour for women physicists

When the Eiffel Tower opened for the 1889 Exposition Universelle, its girders bore in gold lettering the names of scientists whom Gustave Eiffel said had honoured France since 1789. Every one of them was a man. 137 years later, on 26 January 2026, Anne Hidalgo, the mayor of Paris, accepted the nomination of 72 women scientists to join them.

The list spans nearly 250 years and multiple disciplinary domains. Many made important contributions to nuclear and particle physics, and several had close associations with strong partners to CERN such as the Centre national de la recherche scientifique (CNRS) and the Commissariat à l'énergie atomique et aux énergies alternatives (CEA).

Foremost among the women to be honoured is Polish–French physicist Marie Skłodowska Curie (1867–1934), who discovered polonium and radium, helping to establish radioactivity as an intrinsic property of atoms. She carried out systematic measurements of radioactive substances, determined radium's atomic weight and developed methods to isolate radioactive elements from pitchblende. She shared the 1903 Nobel Prize in Physics and later won the 1911 Nobel Prize in Chemistry, becoming the first woman laureate and the only person to receive Nobel prizes in two different scientific fields.

A pioneer in X-ray spectroscopy, Yvette Cauchois (1908–1999) invented the Cauchois spectrometer, a curved-crystal spectrometer widely used for the analysis of X-rays and gamma rays. She introduced X-ray spectroscopy using synchrotron radiation to Europe and later studied the X-ray spectrum of the Sun.

A trailblazer for women physicists in Japan, nuclear physicist Toshiko Yuasa (1909–1980) studied the continuous spectrum of beta radiation emitted by artificial radioactive substances and developed her own double-focusing spectrometer. In 1955 she warned of the dangers of nuclear tests at Bikini Atoll.

Eiffel honour *The women set to be honoured include (clockwise from top left): Marie Skłodowska Curie, Yvette Cauchois, Toshiko Yuasa, Marie-Antoinette Tonnelat, Cécile DeWitt-Morette, Yvonne Choquet-Bruhat and Lydie Koch.*

In the 1960s, promoted to senior research fellow at CNRS, she studied nuclear reactions using a synchrocyclotron.

Marie-Antoinette Tonnelat (1912–1980) worked on early unified theories that sought to connect gravity and electromagnetism. She served as director of research at CNRS.

Henriette Faraggi (1915–1985) introduced new techniques with photographic emulsions and directed the CEA Department of Nuclear Physics from 1972 to 1978. She also served as chair of the Nuclear Physics Commission of IUPAP and became the first woman elected president of the French Physical Society. Convinced early on of the importance of high-energy heavy-ion physics for studying quark–gluon plasma, she played a key role in the decision to build GANIL in Caen.

Cécile DeWitt-Morette (1922–2017) worked in quantum field theory and gravitation, and founded the Les Houches Summer School in 1951, which became a major international centre for theoretical physics training. She later contributed to path-integral methods in quantum theory.

Yvonne Choquet-Bruhat (1923–2025) placed Einstein's field equations of general relativity on a firmer mathematical ground, showing how their behaviour follows from appropriate initial conditions. In 1979 she became the first woman elected as a full member of the Académie des Sciences.

A specialist in cosmic radiation, Lydie Koch (1931–2023) led stratospheric-balloon experiments to detect cosmic rays, contributed to the development of innovative germanium and silicon detectors for the HEAO-3 and COS-B satellites, and advanced X-ray and gamma-ray astronomy. She played a central role in the development of astrophysics at the CEA and was head of the Astrophysics Section from 1967 to 1979.

"It is time for this highly symbolic landmark to embrace the cause of equality between women and men, and to restore women to their rightful place on this monument dedicated to the glory of science and scientists," said Hidalgo.

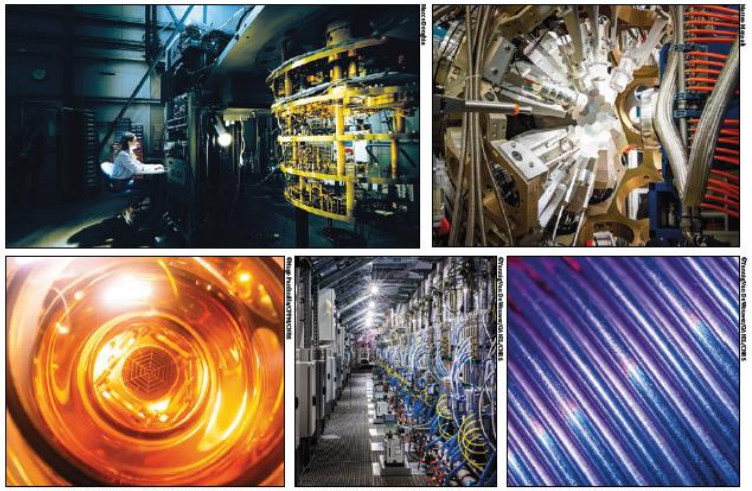
OUTREACH

Physics labs under the lens

Physics is beautiful in its ideas and in the people who pursue them across borders. What better, then, than for 16 laboratories across Asia, Europe and North America to throw open their doors for a photography competition, allowing the aesthetically inclined to immortalise on film the wonders within. The votes are now in.

Immortalising on film the wonders within

The winning image of the 2025 Global Physics Photowalk, by photographer Marco Donghia, shows INFN National Laboratories of Frascati researcher Raffaella Donghia seated beside an open cryostat during installation of an ultra-cold experiment at COLD, the CryOgenic Laboratory for Detectors (see "First place" image). The apparatus houses an axion haloscope – a cryogenic antenna consisting of a microwave cavity resonating at about 9 GHz, immersed in a powerful 9 tesla magnetic field and connected to an ultra-low-noise amplification system designed to search for ultralight ▷



Award winners *(From top left, left to right)* **First place** *Research at COLD by Marco Donghia.* **Runner up** *The AGATA–PRISMA Setup for Nuclear Physics Experiments by Matteo Monzali.* **Third place** *Eye of a Neutrino Telescope by Hugo Pardinilla.* **Public preference** *The Tunnel by Yannig Van De Wouwer.* **Public runner up** *Vacuum by Yannig Van De Wouwer.*

dark-matter candidates such as axions or dark photons (*CERN Courier* January/February 2026 p21). If ultralight dark matter circulates in a galactic halo, it could excite the resonant cavity at a frequency corresponding to the particle's mass, appearing as a minute increase in electromagnetic power at that frequency. Cooling the system to 10 mK suppresses thermal noise to the point that quantum noise dominates.

"The image stood out for its clear visual storytelling and masterful use of light, which leads the eye through the scene and emphasises the moment of discovery," said judge Tabea Rauscher, then creative lead at the European Molecular Biology Laboratory. "The researcher appears small in relation to the cryostat, highlighting the scale of the technology while keeping the human presence at the centre. The lighting creates a quiet, almost cinematic atmosphere that captures both the intensity and the solitude of scientific work."

Fellow judge Dmitri Denisov, deputy associate laboratory director for high-energy physics at Brookhaven National Laboratory in the US, noted that while the judges chose Donghia's photograph for its ability to convey the "deep connection between the apparatuses used in particle physics and the human developing them," the second- and third-place photographs were chosen for their "deep looks into the inner workings of experiments and impressive display of colours."

The photographs move between abstraction and lived experience

The judges awarded second place to Matteo Monzali for his photograph of a nuclear-physics experiment at INFN National Laboratories of Legnaro in Italy (see "Runner up" image) and third place to Hugo Pardinilla for a close-up image of a photomultiplier from the KM3NeT/ORCA experiment, a neutrino telescope currently being installed in the Mediterranean Sea at a depth of 2500 metres off the coast of Provence, France (see "Third place" image). Members of the public awarded first and second place to Yannig Van De Wouwer's photographs of GANIL, the heavy-ion accelerator in Caen, France, featuring pipes and cables serving the SPIRAL2 linear accelerator and iridescent patterns in a beam pipe (see "Public preference" image). The public's third choice went to Monzali's snap of the AGATA–PRISMA setup in INFN Legnaro.

Deeply human

"Serving as a judge for the 2025 Global Physics Photowalk, I was struck by the range and sensitivity of the submissions," concludes judge Will Warasila, a freelance photographer for the *New York Times*. "The photographs move between abstraction and lived experience – finding form, rhythm and quiet beauty in scientific spaces, while foregrounding the people whose labour and curiosity make this work possible. Across geographies and institutions, these images show how photography can slow us down, make complex systems legible and remind us that science is not only technical, but deeply human."

The Global Physics Photowalk is organised by the Interactions Collaboration (interactions.org), an international network of particle-physics institutions including CERN and over 20 partner laboratories and research infrastructures around the world.

CERN COURIER
VOLUME 66 NUMBER 2 MARCH/APRIL 2026

GANIL

Global Physics Photowalk

https://www.interactions.org

2026 Second place (judges)
2026 Third place (public)

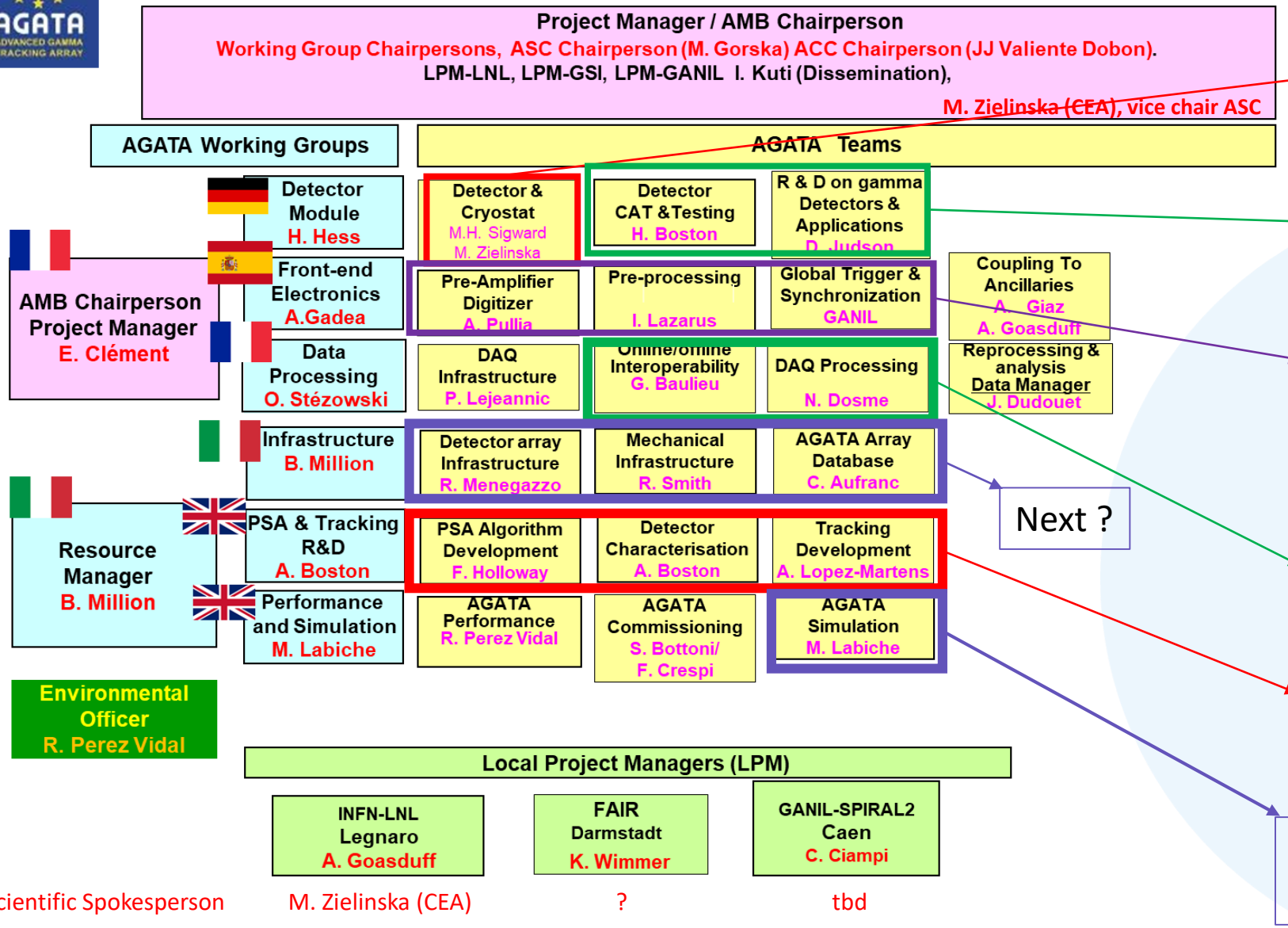
An in-presence AMB was organized on the 30th and 31st of March in Paris

→ I intend to start preparing for phase 3 (>2031) from a technical perspective, which will form the basis of the next MoU.

Many open questions :

- Construction of a 4π spectrometer? → Science driven and look at discovery potential
- Should it be a MoU for the operation and upgrade of obsolete material (FEBE, DAQ and INFRA)? (note that in case of an ISOLDE campaign, cf Silvia's talk, operation cost will increase a lot – no host lab funding)
- **Detector**s: re-evaluation of budget and human implications following the CTT – MIRION transfer of technology. The maintenance of the CTT-like cryostat is also an open question.
- **Back-end electronics**: CAEN® and MESYTEC® have digitizers in their catalogues with readout firmware that are almost compatible with the AGATA needs. The current CAEN® products are being evaluated at LNL. Both companies are developing White Rabbit (Time Stamping) integration.
- **Data Flow**: Is DCOD the best option for distributed data flow with the available open-source Docker® technology?
- **Pulse Shape Analysis** : Should the PSA R&D team be transformed into a fully AI-oriented team?

AGATA Management Board and Teams
Phase 2



MIRION ATC
CTT cryostat
Test lab / expertise ?

Still relevant to have 2 groups ?
Futures objectives ?

GANIL PAC ?
Caen®/ Mesytech® with WR® ?
Push the R&D but who ? How ? € ?

DCOD vs Open Source system ?

Next ?

Are the 3 teams still adapted ?
Full AI ? With its infra ?

Should we maintain sovereignty or join other initiatives? If so, who ?

Time line

- T0 could be the next AGATA week for the AMB
- 2027-2028 should be the years of the PD preparation by the AMB
- 2029 internal review and initiate funding agency discussion (?)
  →Drafting a MoU with financial perspectives
- 2030 – getting a MoU signed for the 2031 funding request (?)

IMAGe
WorkPackage 2: “New technologies for Position Sensitive HPGe detectors”

Coordination: A.Gadea, E.Clement

Task 2.1: Development of germanium detector technologies: improving reliability, sustainability, position sensitivity and timing

- **Subtask 2.1.1Technological developments of PLM contact HPGe for position sensitive segmented detector production: improving reliability, sustainability, position sensitivity and timing.**
  Possible Participants: UNIPD, INFN, CNRS, GANIL, MIRION Technologies
  Contact person: Davide De Salvador davide.desalvador@unipd.it

- **Subtask 2.1.2 Technological developments on cryostats with electro-cooling technology:**
  Possible Participants: UOC Subcontractor: CTT
  Contact persons: Peter Reiter preiter@ikp.uni-koeln.de
  Herbert Hess hess@ikp.uni-koeln.de

- **Subtask 2.1.3 Simulations and tests of advanced segmentation patterns and characterization of the p-type prototypes: improving position sensitivity**
  Possible Participants : CNRS, GSI, ILL, GANIL, MIRION Technologies
  Contact person: Gilbert Duchene gilbert.duchene@iphc.cnrs.fr

IMAGe
WorkPackage 2: “New technologies for Position Sensitive HPGe detectors”

Coordination: A.Gadea, E.Clement

Task 2.2: Digital Pre-Amplifier Development

- **Subtask 2.2.1 Cryogenic and Refrigerated High-bandwidth ASIC pre-amplifier developments for position sensitivity and timing.**
  Possible Participants: UNIMI, CNRS, CEA, GANIL. Subcontractor: EUROPRACTICE
  Contact persons: Stefano Capra stefano.capra@mi.infn.it
  Alberto Pullia alberto.pullia@mi.infn.it
  Philippe Vallerand philippe.vallerand@ijclab.in2p3.fr

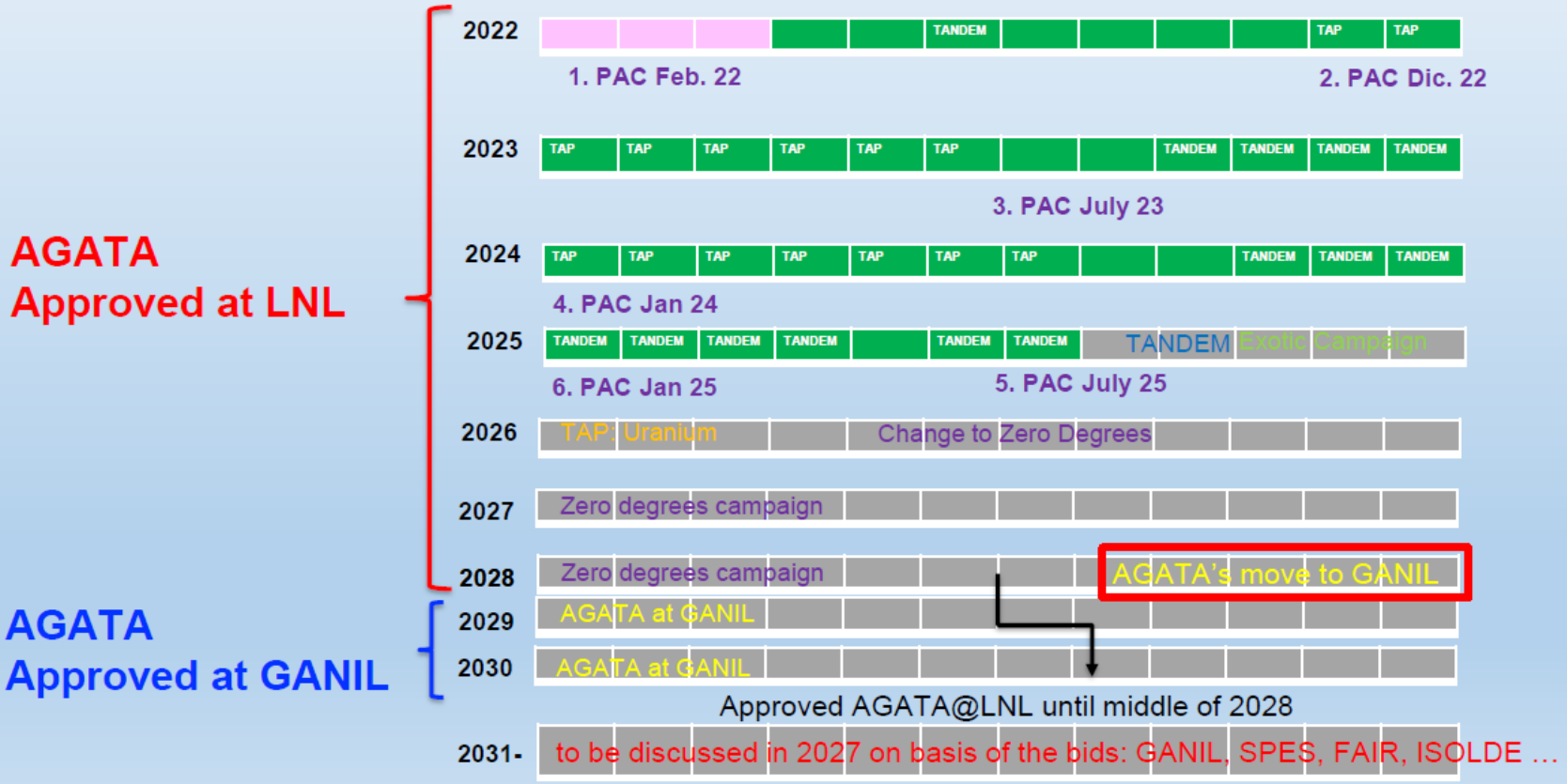
- **Subtask 2.2.2 Interconnection of Cryogenic and Refrigerated pre-amplifier to warm digitizer.**
  Possible Participants: CNRS, UOC Subcontractor: CTT
  Contact person: Nabil Karkour karkour@ijclab.in2p3.fr

- **Subtask 2.2.3 Low-Power, Low-Noise ADC System and pre-processing electronics for Cryogenic and Refrigerated ASIC Pre-Amplifier Readout.**
  Possible Participants: UVEG, UNIMI, CSIC
  Contact person: Vicente González Millán vicente.gonzalez@uv.es

AGATA Campaigns

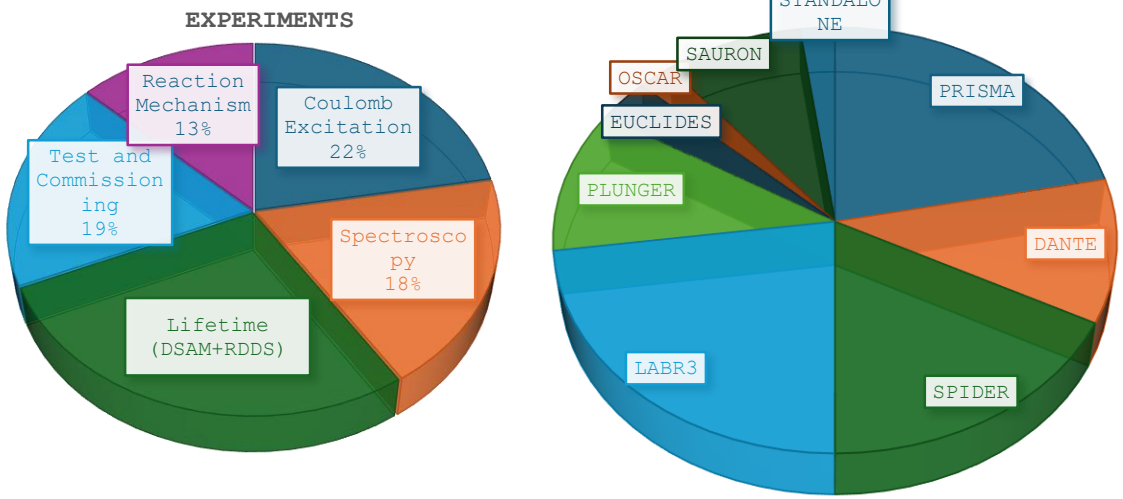
AGATA Campaigns

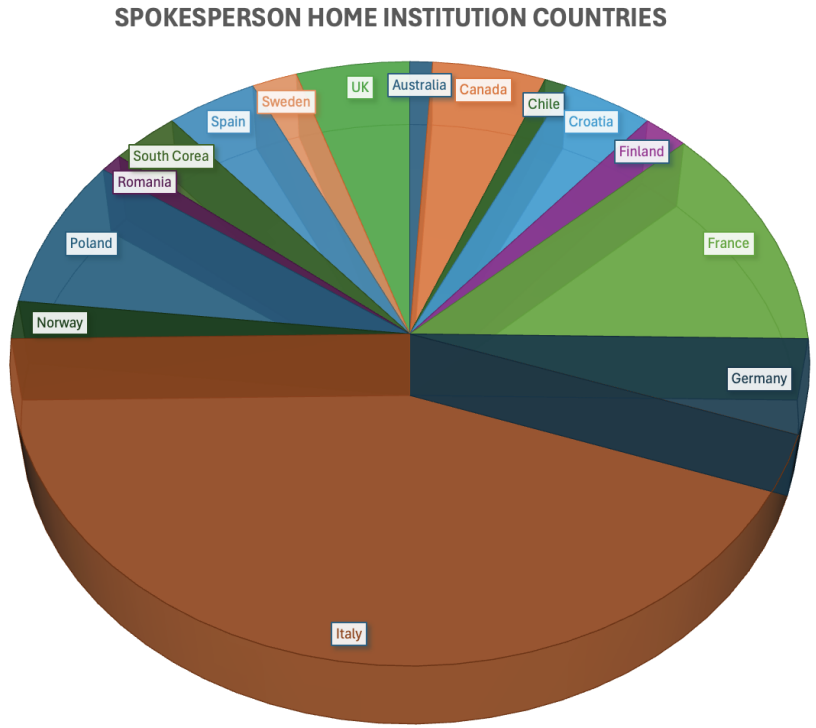
Timeline of approved AGATAcampaigns (up to end 2030)



AGATA@LNL: Status of the Campaign

- Official campaign started in April 2022
- 4 in-beam commissioning
- 7 pre-PAC physics workshop organized
- 45 experiments performed
- More than 9000h of beam on target (Exp + com)





Physics cases - 2025

Quadrupole shapes and shape coexistence

Shape coexistence and shape isomers related to mp-mh excitations across Z=50 (**Coulomb excitation of ^{112}Cd, ^{104}Pd, ^{122}Te**)

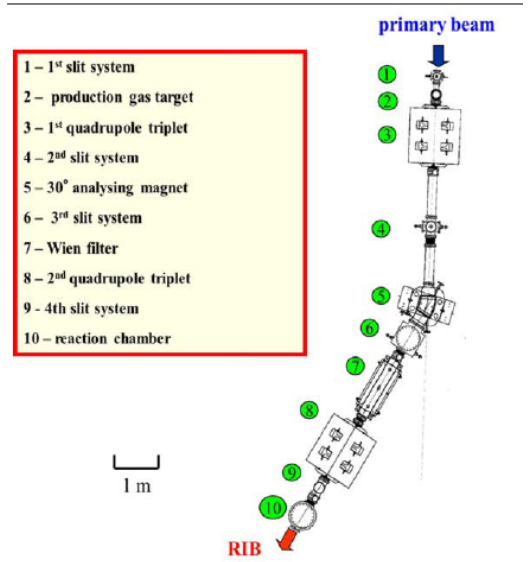
Shape coexistence in **^{52}Cr (lifetime measurements)**

Gamma decay of IAS in **^{71}Ge**

Quadrupole and **octupole collectivity** in **^{232}Th (Coulomb excitation)**

High-spin states in **^{158}Er**
Commissioning for high-fold conditions

Superallowed β Decay of **^{10}C**
Near-threshold resonance in **^{11}B**
Tests of ab-initio descriptions of **^{8}Li**
(Coulomb excitation at EXOTIC)

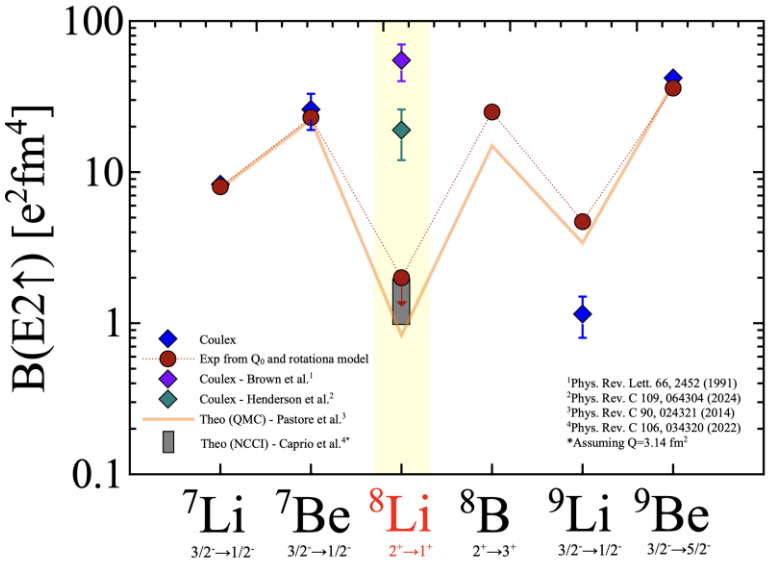


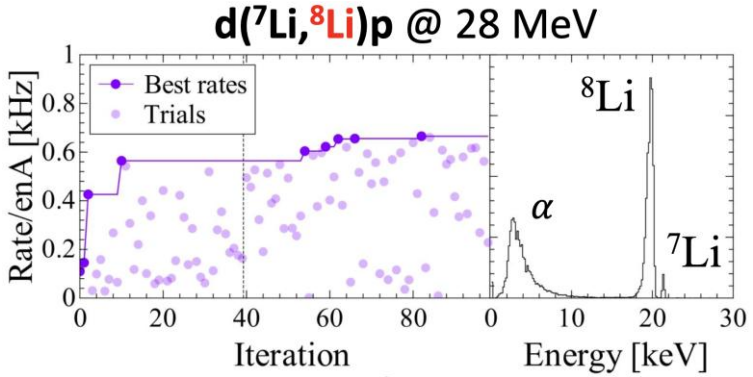
First RIB experiment of AGATA@LNL

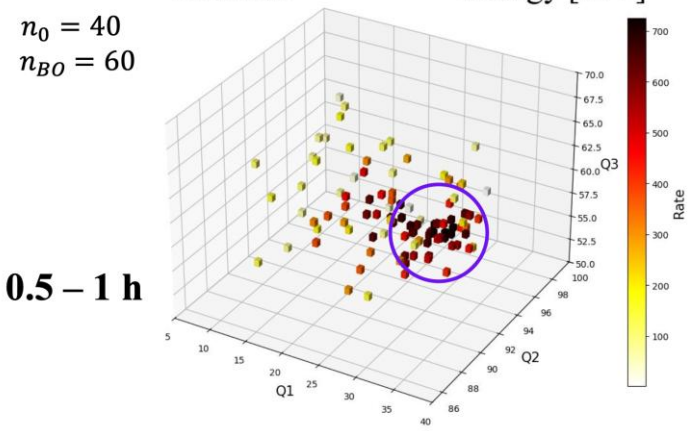
"Solving the puzzle of quadrupole strength in ^{8}Li to benchmark ab initio predictions in few-body nuclei"
S. Bottoni, F. Galtarossa, M. Rocchini

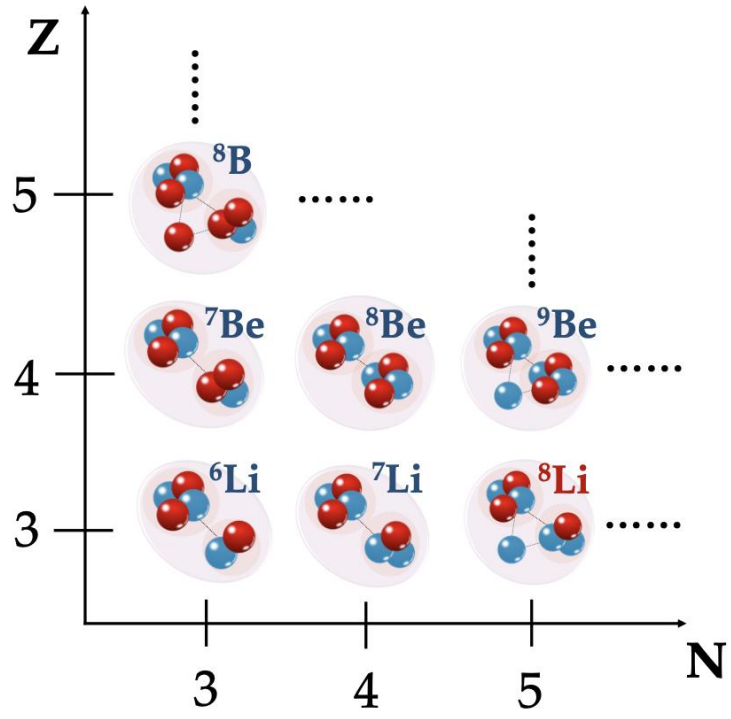
Beam commissioned in Oct. 2025.
ML optimization of beam transport:
470 pps / pnA of primary beam

Minimum guarantee intensity on AGATA Target: 5.10^{4} pps









Courtesy of *S. Bottoni, F. Galtarossa, M. Rocchini*

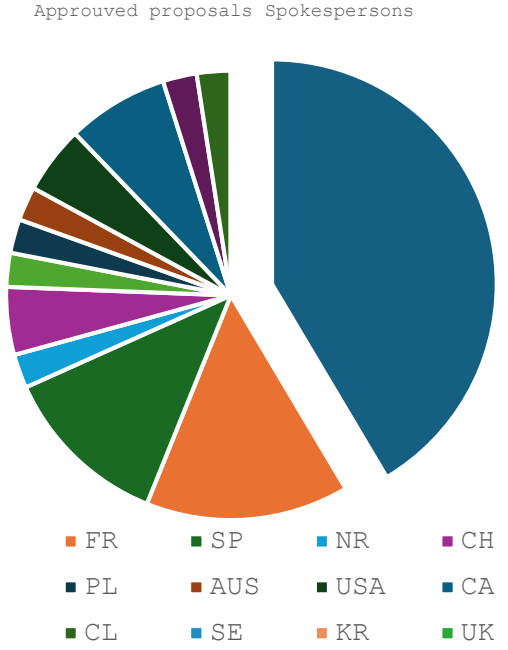
The Physics Campaign to come (2025-2026)

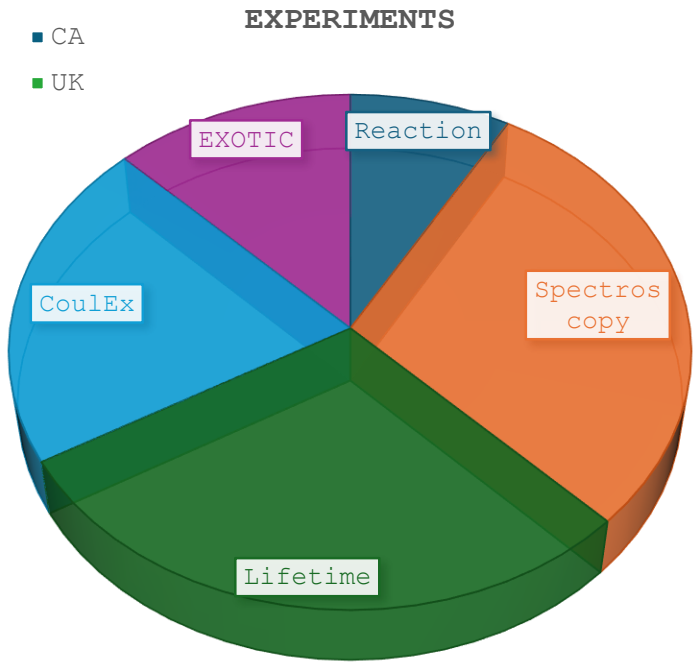
24 Experiments (250 days) with AGATA submitted to the last PAC (October 2025):

- 11 TANDEM Only (**97 days**)
- 2 TANDEM+ALPI (**20 days**)
- 11 PIAVE+ALPI (**133 days**) mostly with the ^{238}U beam (**87 days**)

100% of the approved experiments in priority A for Nuclear Physics are AGATA

- 6 TANDEM Only (65 days)
- 1 TANDEM+ALPI (7 days)
- 4 PIAVE+ALPI (52 days) with ^{238}U beam (45 days)
- +1 recovery of PRISMA-AGATA experiment
- + 2 experiments in backlog (^{40}Ca and ^{44}Ca beams which could performed during the zero-deg campaign)

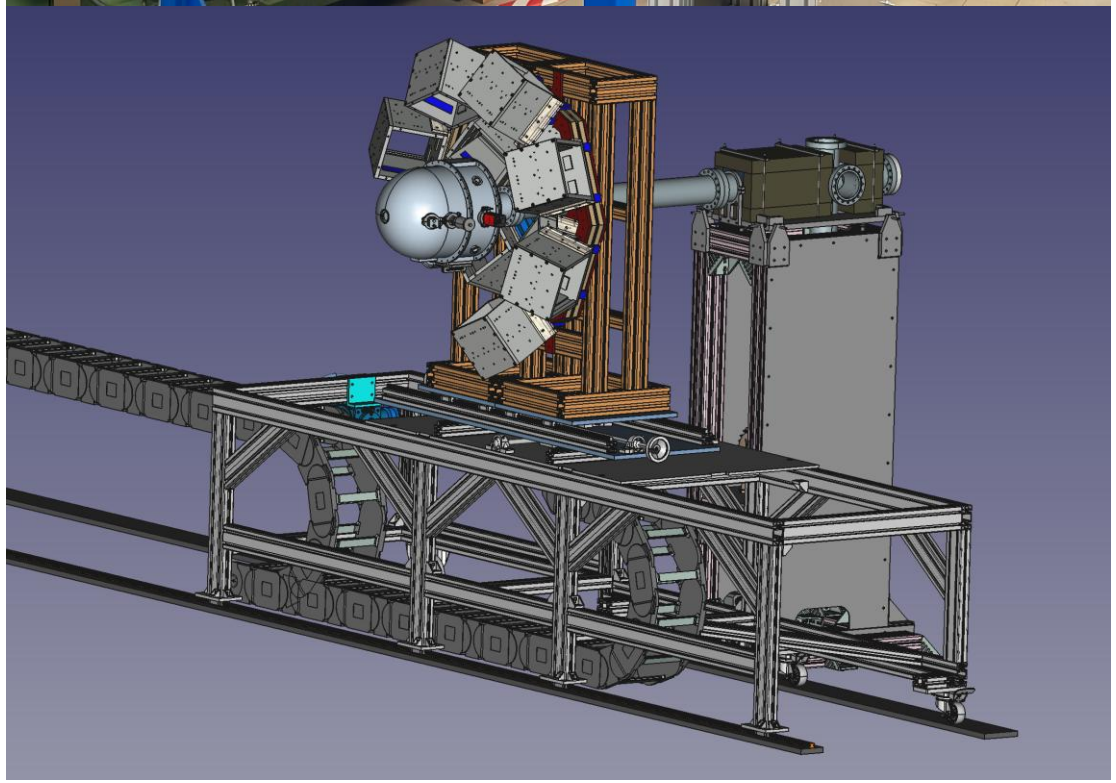




The Zero-degree preparation

- Physics campaign preparation:
  - 29 LoI proposed during the 3rd AGATA@LNL pre-PAC - April 2023
  - Dedicated NEDA Pre-PAC foreseen for June 2026
  - PAC for the first semester of 2027 in October-November 2026

- Technical preparation:
  - Reaction chamber, beam line and beam dump delivered
  - Mounting in progress
  - Vacuum test by the end 2025
  - Adjustment of the PLC for the vacuum system
  - Mechanical support for the shaft already produced and delivered to LNL
  - Collaboration with IJCLab for the design and production of support table (common to NEDA and PARIS)
  - Funds transferred from LNL & Mi to IJCLab for the production
  - Detector support structure of NEDA already delivered to LNL from GANIL
  - DAQ integration of PARIS is done
  - DAQ integration of NEDA is on-going
  - Re-programmation of the V0 GTS mezzanine in progress



Installation timeline

- **First trimester of 2026:**
  - Refurbishment of the GALILEO LN2 distribution system after the one year shutdown
  - All the necessary material for 15 ATC has already been procured (PT-100, LN2 pipes, …)
- **July 2026:**
  - Pre-PAC for the first part of the zero-campaign
- **First week of August 2026:**
  - Last performance measurements in the PRISMA configuration
- **Mid-August to end of september:**
  - Un-cabling DigiOpt-12 (MDR + optical Fibers)
  - Removing the ATC from the array keeping them cold on GALILEO system when needed – Manutention of the detectors is foreseen from octorber onwards.
- **October 2026:**
  - Manutention of the LN2 manifold and extension of the cryogenic line
  - Removing the honeycomb and shaft
  - Rotating the electronic platform to the fixed position
  - Installation of the shaft mechanical support
- **November 2026:**
  - Installation of the shaft and alignment with the laser tracker
  - Extension of the beam-line through the shaft
  - Installation of the reaction chamber / beam dump
- **December 2026:**
  - Cabling
  - Installation of AGATA detectors
  - Installation of NEDA detectors on their mechanics
- **January 2027:**
  - Source measurement for AGATA and NEDA
  - Thanks to the moving table it will be possible to limit the exposition of AGATA to the neutron source
- **February 2027:**
  - In-beam commissioning of AGATA-NEDA

GANIL 2029-2030

C. Ciampi (GANIL) – Local Project Manager

GRIT AGATA VAMOS 2029-2030 Campaign

11 juin 2025, 14:00 → 13 juin 2025, 12:30 Europe/Paris

GuestHouse (GANIL)

Description The AGATA European Tracking array will be hosted at the GANIL Facility in 2029 and 2030 with a possible extension in 2031. The primary objective is an experimental campaign using a 2\pi AGATA coupled to GRIT, a 4\pi silicon array for light charged particle spectroscopy, and the high acceptance VAMOS magnetic spectrometer.

The present meeting aims at defining more precisely the physics objectives with the goal of editing a white book to prepare the campaign. The worshop will also include technical aspects with discussion on the detection systems geometries, constrains, front end electronic and softwares. The management of the campaign will be also introduced.

The campaign will benefit of the existing SPIRAL1 beams but developpment of new beams will be encouraged.

The meeting is in presence but remote connection is available

https://cnrs.zoom.us/j/92308700103?pwd=KNXiOgn4FxLJWsl1velyH5EnU3lvob.1

Inscription *Vous êtes inscrit(e) à cet événement* 49 Vérifier les détails

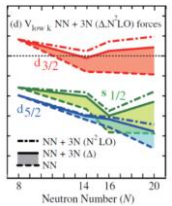
Participants Adrien Matta, Amel Korichi, Andrea Gottardo, Andrei Andreyev, Armand BAHINI, Bénédicte Million, Caterina Ciampi, Charlie James PAXMAN, Charly NICOLLE, Daniele Mengoni, Diego RAMOS

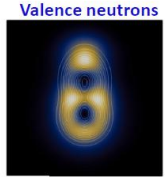
- Science Driver
- DAQ and software
- Infrastructure and mechanic
- Organization

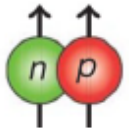
https://indico.in2p3.fr/event/34661/

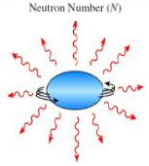
- → Conclusions available on the indico

→Host Agreement drafted between the LPM's
→ Common DMP drafterd between the LPM's
→ 1st budget estimation ~430k€









Microscopic origins of shape coexistence at N, Z ~ 40 explored through direct transfer Charlie James PAXMAN

Probing mixed-spin np pairing in the super-collective Z~60 and A~130 region, J. Dudouet al

Neutron-proton pairs in the self-conjugate Nuclei (Ti,Ni) of the *fp*-shell through two-nucleon; M. Assié, et al

Clustering in medium-mass proton-rich nuclei (Ar) studied through Li-induced stripping reactions, D Beaumel et al

Spectroscopy of proton-rich nuclei using charge-exchange reactions and proton adding with a ^{3}He target, B. Fernandez-Dominguez et al.,

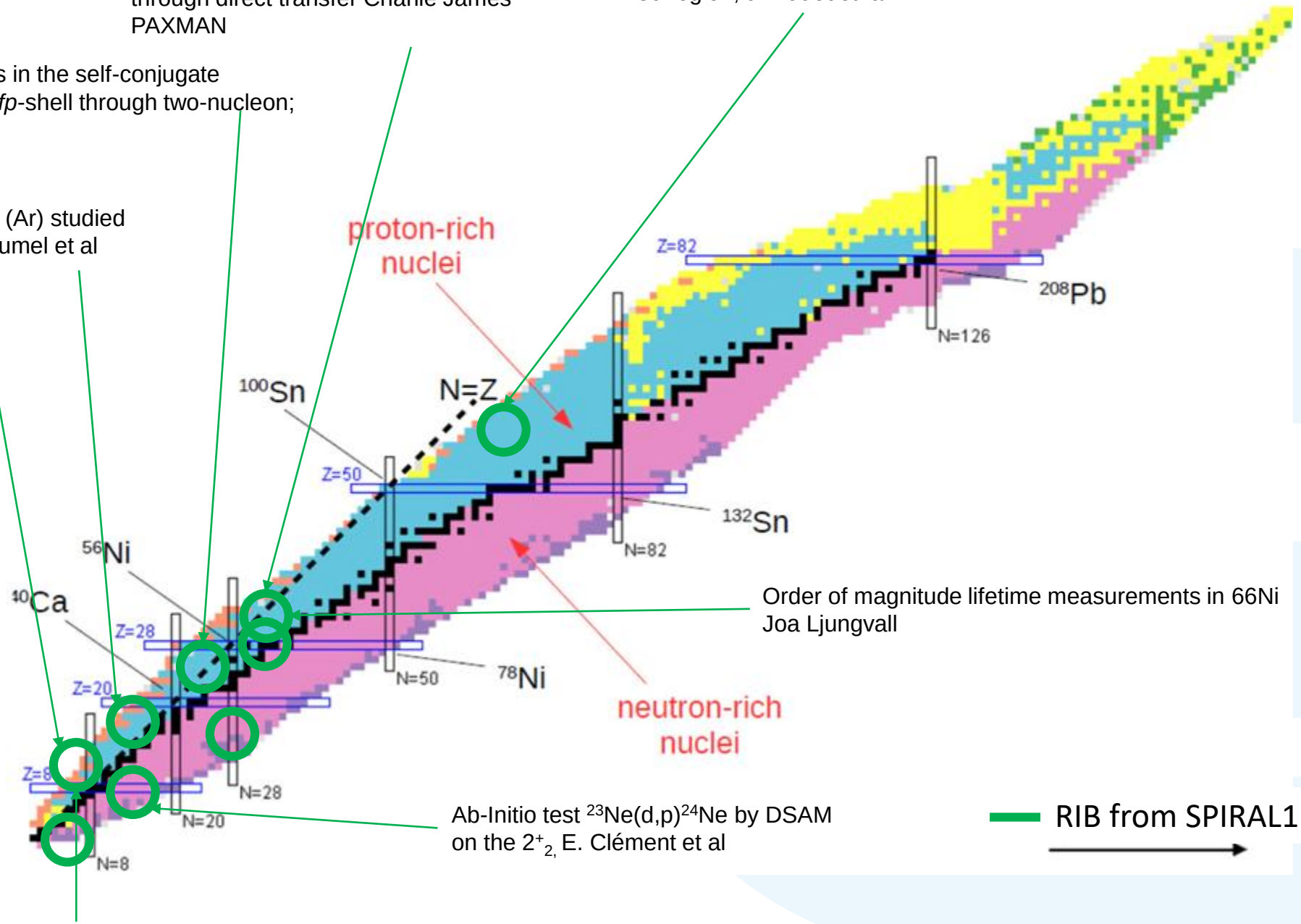
Andrea Gottardo : Investigating the possible bubble nucleus 46Ar

Possibilities offered by (3He,n) reactions with AGATA and SPIRAL1 beams, Jose Javier Valiente Dobon

Nuclear structure and astrophysics with neutron-deficient SPIRAL1 beams, Daniele Mengoni

Structure of light neutron-rich nuclei probed with direct reactions Simone Botton

single-particle structure in spherical and deformed f7/2 nuclei: the 48Cr and 56Ni cases Franco Galtarossa



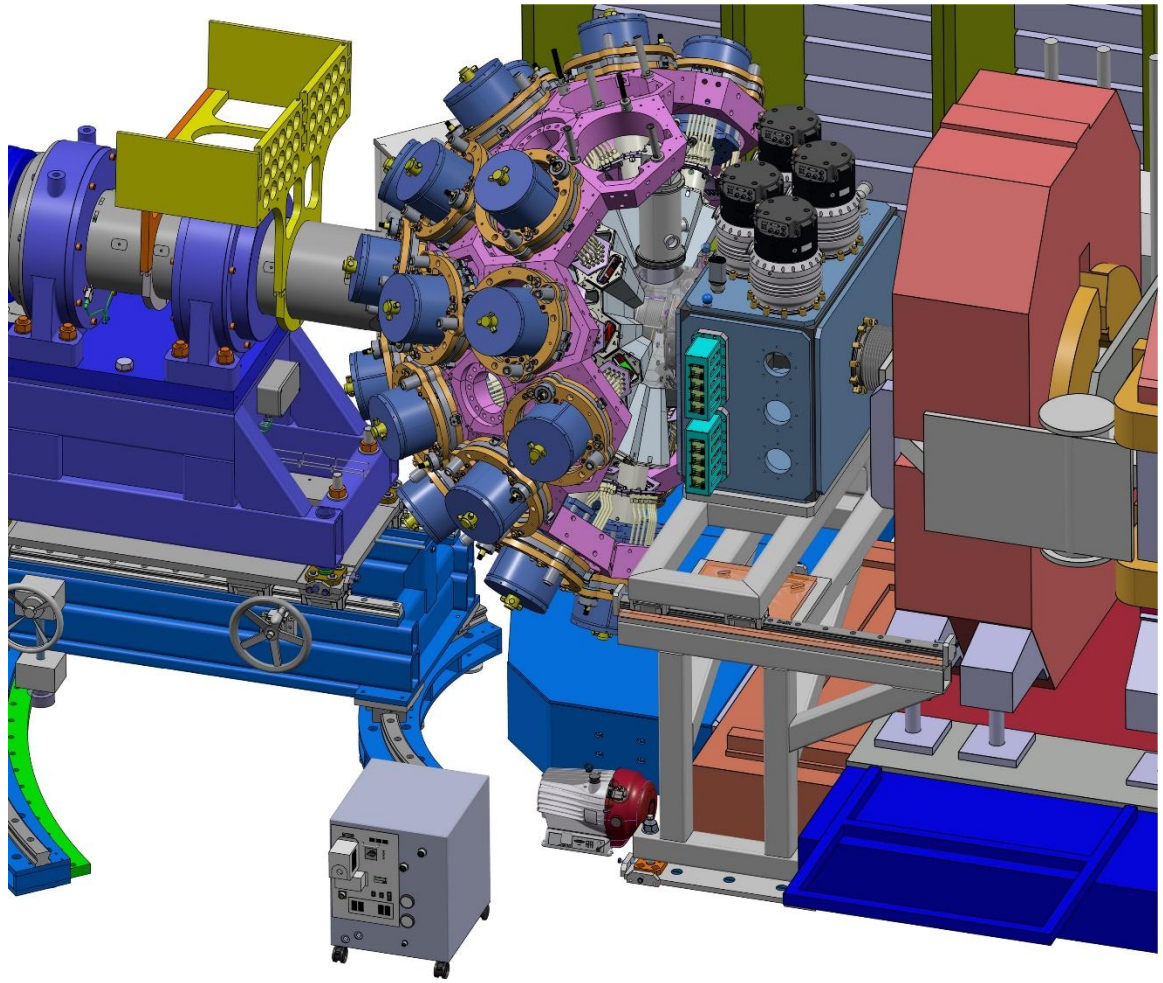
Order of magnitude lifetime measurements in 66Ni Joa Ljungvall

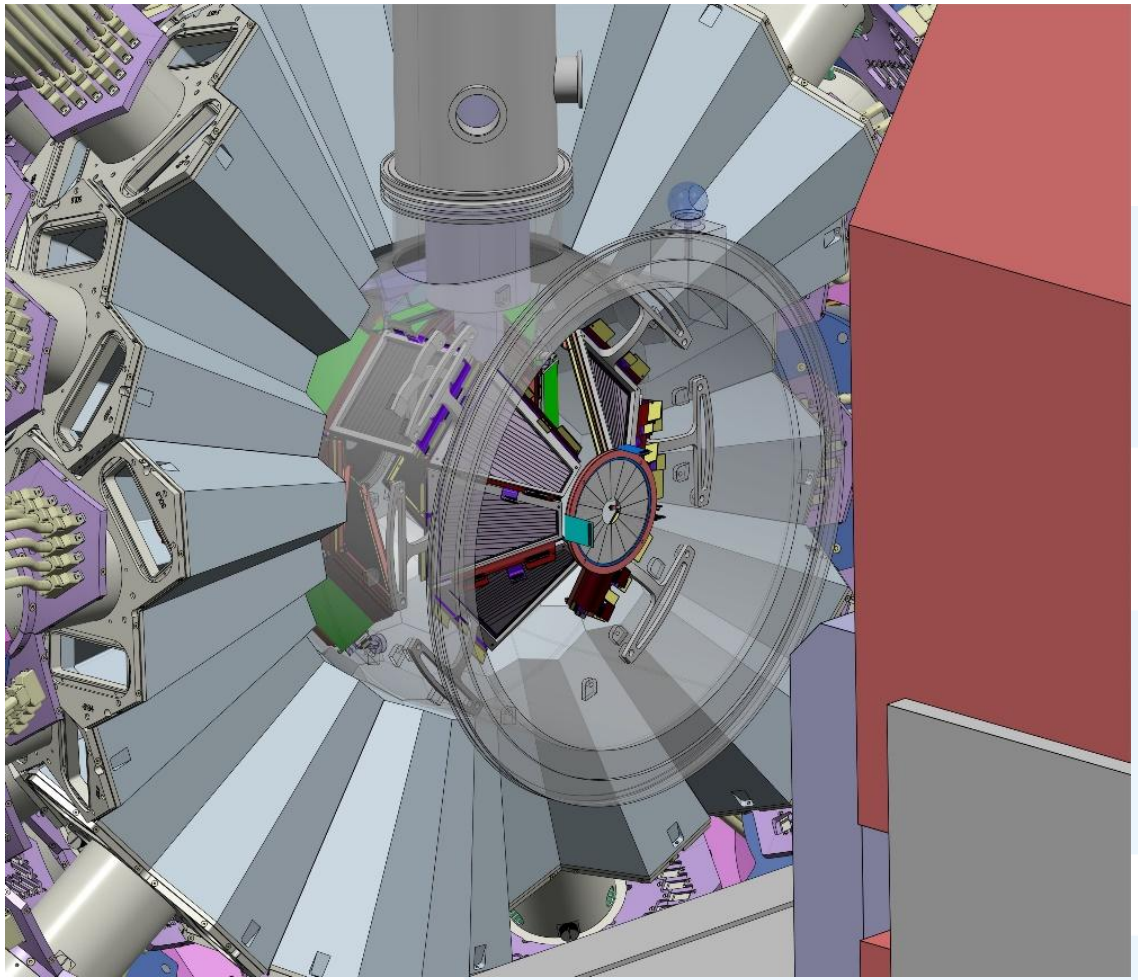
Ab-Initio test ^{23}Ne(d,p)^{24}Ne by DSAM on the $2^{+}_{2,}$ E. Clément et al

RIB from SPIRAL1

Studying X-ray Bursts with the AGATA-GRIT-VAMOS Setup G. Lotay et al

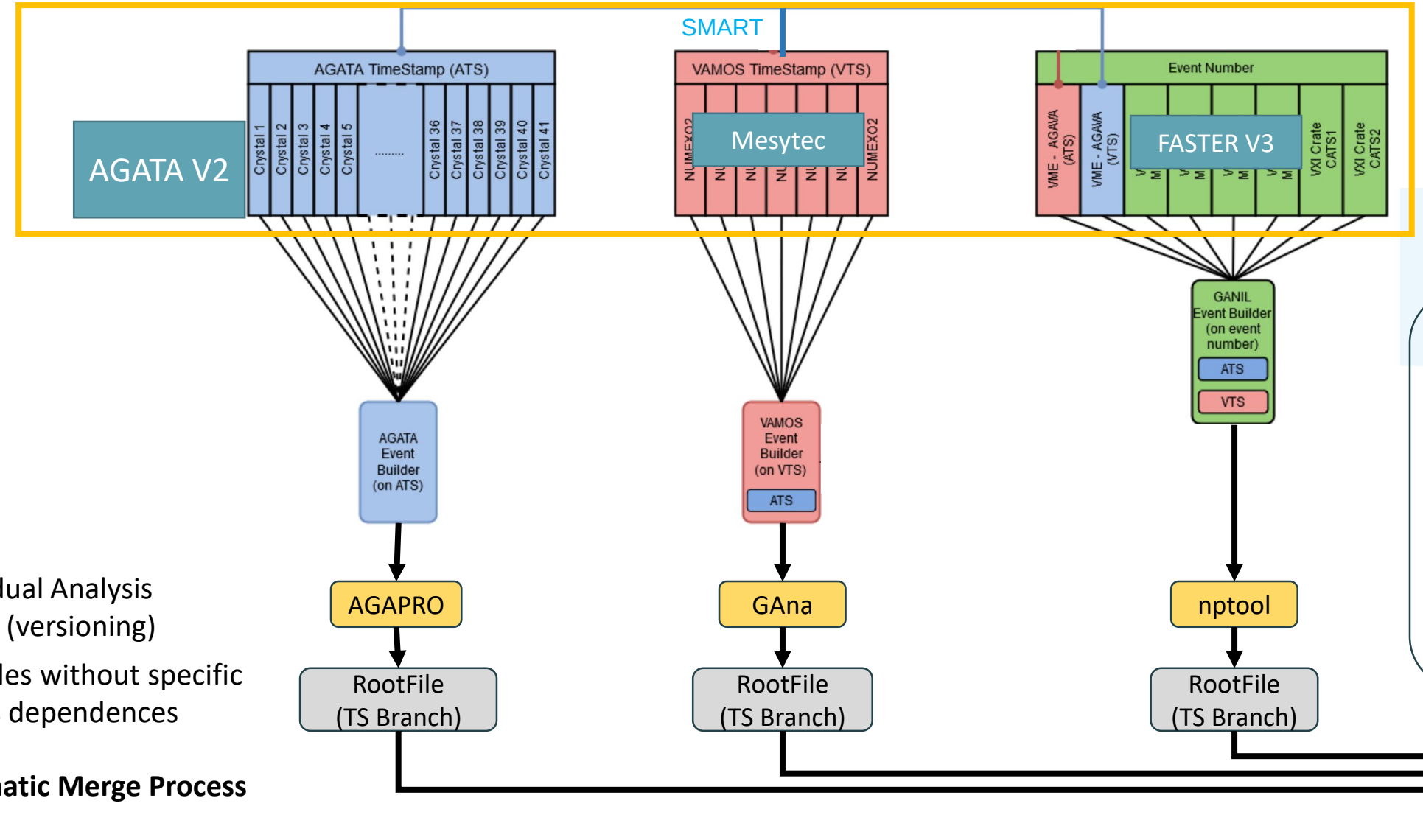
General view





Data Flow

https://gitlab.in2p3.fr/ip2igamma/agapro https://gitlab.in2p3.fr/ganilanalysis/ganalysis https://gitlab.in2p3.fr/np/nptool



GANIL RCC
ssh scripts toward the subsystems with minimum info's

ADVANTAGES:
- Parallel analysis
- Full compatibility

RISKS:
- Lost of versioning
- Latency in data quality checks
- Lost of run index synchronization

- Individual Analysis Process (versioning)
- RootFiles without specific libraries dependences

- Automatic Merge Process

D. Ramos adapted

Each collaboration has already a strong policy for meta data and data integrety checks


GANIL