



**AGATA AMB Phone conference** 26<sup>th</sup> March 2025

**Sujet : AGATA AMB March 2025 –**

**Apologies: B. Million, K; Wimmer**

The main agenda of the meeting was to review the contributions and presentation on behalf of the AMB for the ASC meeting 1st and 2<sup>nd</sup> of April organized for the 2025 mid-term review of the project

<https://u.ganil-spiral2.eu/cloud/index.php/s/3YM1x8mtQBN19sn>

**LNL Status (A. Goasduff)**

Presently running the Coulex campaign. Campaign shutdown from 15<sup>th</sup> of April to 1<sup>st</sup> of June. During the shutdown, action on the CEPH with the IJClab visit. On-going discussion with the IT groups to identify which hardware will move to the new LNL data center. Due to the optical links with the DIGOPT12 and GTS Tree, the ancillaries infra will move first. A GUI problem is reported on the LVPS to the saclay team. Replacement of 1 detector on-going. The capsules will go to MIRION for annealing. In the array, one FET broken, one ATC with LN2 system issues. Dino's pushed a new release of the GGP firmware. Visit of Herbert to be organized to deliver new ATC and bring back to IKP other ATC.

**ASC Report / ASC Matters (M. Gorska)**

Get ready for the ASC meeting and input document from the AMB. The ARRB is scheduled on the 22<sup>nd</sup> of April.

**ACC Report / ACC Matters (S. Leoni)**

Silvia circulated the announcement for the election of a new Chair of AGATA Collaboration Council (AGATA Spokesperson). The procedure is fully in the hands of ACC, therefore Silvia kindly asked to propose candidates in the next four weeks (with deadline Friday April 18th), in order to have the election of the ACC Chair by end of April/beginning of May, at the latest. A long debate started on the AGATA core list author for LNL since 2021; A reminder of the rules is mandatory. Silvia will do at the ASC the general scientific presentation. Agreement.

**GSI Status (K. Wimmer)**

No report

## REPORTS FROM THE WORKING GROUPS

### Detector Module (H. Hess)

B025 (Saclay) has been delivered. C017 repair completed. Magda goes to MIRION for FAT.

Status of the 71 asymmetric capsules + 3 symmetric.

	Owner		Owner		Owner
<b>S001</b>	IKP	<b>S002</b>	GSI	<b>S003</b>	TUM
<b>A001</b>	GANIL	<b>B001</b>	INFN Padova	<b>C001</b>	INFN Padova
<b>A002</b>	INFN	<b>B002</b>	IN2P3	<b>C002</b>	CEA Saclay
<b>A003</b>	Liverpool	<b>B003</b>	Liverpool	<b>C003</b>	Liverpool
<b>A004</b>	Ankara	<b>B004</b>	Ankara	<b>C004</b>	Ankara
<b>A005</b>	Sweden	<b>B005</b>	Sweden	<b>C005</b>	Sweden
<b>A006</b>	INFN Padova	<b>B006</b>	INFN Padova	<b>C006</b>	INFN Legnaro
<b>A007</b>	INFN Milano	<b>B007</b>	IKP Cologne	<b>C007</b>	IKP Cologne
<b>A008</b>	IKP Cologne	<b>B008</b>	IKP Cologne	<b>C008</b>	Liverpool
<b>A009</b>	Liverpool	<b>B009</b>	Liverpool	<b>C009</b>	CEA Saclay
<b>A010</b>	INFN Milano	<b>B010</b>	INFN Milano	<b>C010</b>	IFIC Valencia
<b>A011</b>	IN2P3	<b>B011</b>	INFN Legnaro	<b>C011</b>	IN2P3
<b>A012</b>	CEA Saclay	<b>B012</b>	IN2P3	<b>C012</b>	IN2P3
<b>A013</b>	TU Darmstadt	<b>B013</b>	CEA Saclay	<b>C013</b>	IFIC Valencia
<b>A014</b>	IKP Cologne	<b>B014</b>	INFN Milano	<b>C014</b>	INFN Milano
<b>A015</b>	IN2P3	<b>B015</b>	TU Darmstadt	<b>C015</b>	TU Darmstadt
<b>A016</b>	Finland	<b>B016</b>	IKP Cologne	<b>C016</b>	IKP Cologne
<b>A017</b>	Atomki	<b>B017</b>	Univ. of York	<b>C017</b>	Univ. of York
<b>A018</b>	UWS	<b>B018</b>	Atomki	<b>C018</b>	Atomki
<b>A019</b>	GANIL	<b>B019</b>	UWS	<b>C019</b>	UWS
<b>A020</b>	IN2P3	<b>B020</b>	GANIL	<b>C020</b>	IN2P3
<b>A021</b>	Liverpool	<b>B021</b>	INFN	<b>C021</b>	INFN
<b>A022</b>	Spain	<b>B022</b>	Liverpool	<b>C022</b>	GANIL
<b>A023</b>	GSI	<b>B023</b>	GSI	<b>C023</b>	GSI
<b>A024</b>	Liverpool	<b>B025</b>	CEA Saclay		

Remain in the pipe GANIL : B024, C025, (delivery 2025) and INFN(4) : A025, C024 (delivery 2025) , +2 orders in March 2025 → 2026 delivery

**Infrastructure (B. Million)** *No report*

**Front End Electronics (A. Gadea)**

Coordination: last Electronics W.G. VC was on February 25<sup>th</sup> 2025,  
next Electronics W.G. VC meeting on Wednesday, April 2<sup>nd</sup>, 2025 10:00 CET, 9:00  
U.K.

**DIGIOPT12 (A.Pullia):**

While for the preamp fast reset enable/disable functionality is included in v3.7.1 for both core and segment, for v 3.7 and before, this function is implemented for core cards only. Presently 141 v3.7 segment boards and 129 v3.6.1 segment boards have been delivered or are in production. A decision is to be made regarding the installation of the missing component to activate the functionality, before assembling the electronics.  
Enquire about this possibility sent to A.Pullia and the EOS company.

**PACE Status (J.Collado, reported by A.Gadea and V.Gonzalez)**

**PACE Production-**

After completion of the flying probe tests repairing and mounting of the last connectors is proceeding. The goal is to have a substantial number of boards to speed up the FAT.

2 x PACE-CAP-v100-t58 boards have been delivered to Valencia to check the testing procedure.



A couple of small issues found, one resistor to be removed and the SFP connector box is missing.

Regarding the SOM's necessary for testing and delivery, presently we have

67 x TE0808-05-BBE21-A already delivered (2020-2024)

-----Change of obsolete PLL -----

2 x TE0808-05-BBE21-E already delivered

5 x TE0808-05-BBE81-E already delivered

33 x TE0808-05-BBE81-E waiting order or delivery

## PACE Firmware Status –

Problems with ADF formatting still persisting, origin of the issue still under discussion.

Presently the LNL test setup is off due to the power supply changes in LNL experimental hall 2.

At LNL setup we are using a pre-production STARE with the firmware V19 (at least 2 years old) because

we had issues with newer versions since the PACE IP bus uses masks and it seems that they were not

working in latter versions. This is solved in the new STARE firmware.

Confirmed the possibility to use directly the PACE-STARE setup presently at Orsay. Javier Collado can have access and a way to upgrade the firmware of PACE via JTAG or by SD.

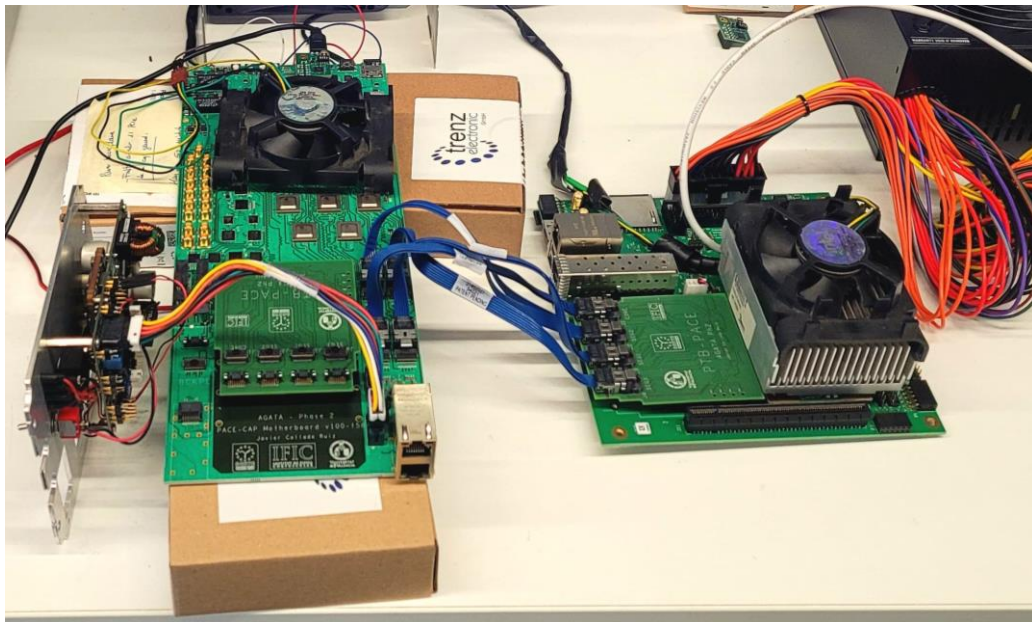
Then we can perform the test while waiting for the updated firmware to be installed at LNL.

Meeting between the major actors in the test to be organized.

## PACE Firmware Maintenance Contract

Status and schedule:

1. Maintenance of the test setup, to have it completely working, has been completed within **March 2025**. The setup has been built in Valencia and tested. The setup is already able to identify the TE0808 version and upload the configuration file for the replaced PLL in the version This will allow to proceed with the Factory and AGATA acceptance test of the PACE boards.



Test Set-up without the mechanical enclosure

2. Maintenance of the AGATA Ph2 Trigger Firmware for GTS integration, SMART integration, Trigger system control, Trigger system architecture and Trigger Match IP block. Scheduled **to be started mid April 2025**
3. Maintenance of the monitoring firmware and update of the control system to consider new versions of PACE SoM. Scheduled during May 2025

4. Update of the documentation, update of the programming platform and preparation of the firmware for future energy algorithms development. Scheduled for May and June 2025.

### **PSU and Mechanics: (V.Gonzalez)**

PSU under production

- PCB already at the mounting company, few missing components to complete the 50 units production, already ordered.

### **New Energy Processing Firmware (M. Kogimtzis)**

Meeting to evaluate compatibility of the present IP, the triggering and for the preparation of the integration took place on March 25<sup>th</sup>.

### **Procurement and Schedule**

Nowadays the status of the hardware parts production is as follows:

- DIGIOPT12: 55 v3.6.1 core boards and 129 v3.6.1 segment boards delivered within 2023. Then it was necessary a major update of the hardware changing the ADC and several other components. This new version is called DIGIOPT12 v3.7. Presently 35 v3.7 core boards and 141 v3.7 segment boards have been delivered or are in production. The total number of DIGIOPT12 boards produced for the phase 2 electronics is 90 core boards and 270 segment boards, allowing to instrument 90 channels.
- PACE: the production of 90 PACE motherboards is ongoing. Expected completion **March 2025**, then the Factory acceptance test and the AGATA acceptance test will be performed. Expected delivery starting in April 2025. Electronic components have been purchased for the full 135 boards production to avoid obsolescence issues.
- STARE: the production of the STARE motherboards was completed late 2024. Presently the boards are being delivered as soon as the corresponding SoM's are available with a lead time of 3 to 4 weeks. Presently 38 complete STARE boards and 25 more are under acceptance tests. Mid 2025 we expect to have more than 100 STARE boards populated with the corresponding SoM's and fully working.
- Regarding the mechanics, enclosures are purchased for 66 units and cooling plates for 140 units are under production. Signal and Power Backplanes are available in quantities of 50 and 60 units respectively and towards mid 2025 we expect to number on 75 and 85 respectively. Power supply units will be produced starting late February.

The schedule for the integration testing should be as follows:

- Hardware ready mid 2025
- Test immediately standalone with 1 ATC as soon as GTS integrated into the firmware (April-May 2025)
- 2nd half 2025 for testing full system with more channels and V1 synchronisation

### **Data Processing (O. Stézowski)**

The delivery of the phase 2 FEBEE is expected by end of 2025. Action on Olivier to make sure that we have the hardware resource. VOMS server switch to iam-indigo on-going. The service is installed in Orsay and managed by Lyon. As mentioned in the LNL report, the next major action is the CEPH upgrade with a in-situ visit of the IJClab team.



## **PSA and Tracking R&D (A. Boston)**

### **Characterisation**

Last Team meeting scheduled 28th Feb 2025. Report from Dan Judson.

### **Liverpool**

The new scanning table is up and running. Both scanning tables are running. Data is currently being collected with A601 on the new table to validate its performance v's the old scanning table. Singles scans, depletion scans and bore hole scans have been performed and coincidence scan is well advanced. Measurements to quantify neutron damage are expected to take place in May/June depending on the availability of the neutron facility at Birmingham. It is possible facilities at AWE could be used if the one at Birmingham is not available. The 2nd test cryostat is currently out of action due to a failure of the autofill leading to the warm preamps being damaged. They have been sent back to Cologne and are awaiting repair.

### **Strasbourg (IPHC)**

Have been upgrading PCs and upgrading operating systems, difficulties with TNT cards giving error messages. Hopefully a simple fix and scanning will resume soon. Have bought a new PC with 100 Tb of storage. All data will be transferred to the new storage device and converted to ADF format at the same time. The analysis will be done on this machine too. Mirion have requested to scan a SAGe Well detector in March, initially this was going to be singles scan but maybe 3d. Gilbert would like to scan 2 AGATA detectors of each type (A,B,C) to compare the different types and different detector of the same type. Emmanuel says there are only 2xAs, 1xB and 1xC available and as more digitisers will be available by the end of the year, wants to maximise the number of detectors in the array at this time. Gilbert argues that not having one detector from an array of 70 for a short period of time will have little impact on the physics being measured. The 1st detector to be scanned would be needed for around 6 months so that tomography measurements and comparisons could be made. The later detector scans would not need tomographic measurements and so would be much quicker. However, there is currently no test cryostat at Strasbourg as it is being used in Salamanca for B003 so these measurements could only start once the measurements on B003 are completed.

### **Salamanca**

The scanning of B003 is ongoing. Data is being acquired and saved. Roughly 100 gamma-camera + Agata coincident events per second using a ~300 KBq source. There have been issues with the hardware and software. These have been addressed with a new PC and support from GSI. One computer was found not to be in the system, trying to add it to make the system faster. While these were being worked on, work has been carried out to develop AI algorithms for the analysis of collected data and to match gamma-camera events with events from AGATA. Some (3-5) segments from B003 appear to be not working / working intermittently. The affected segments do not change when swapping the cables from the detector so it is believed to be detector issue. It will not be able to scan whole detector (missing segments + neighbours are affected), may have to scan just the working segments to prove the system / analysis works.

Begona estimated around 1 month to collect sufficient scan data. Galas PhD relies on taking A005 scan data to compare with the Liverpool + Strasbourg data so they would like A005 by the end of the year at the latest. This should be possible but depends on the time taken by Mirion to repair the capsule.

### **GSI**

Scanning of A005 began in November 2024. Around 47 days of scanning were completed before the HV tripped in January 2025. Scans illuminating the front, left and right of the detector were completed and >105 full energy coincidence events per segment were recorded. Position calibration using a collimator was taken before Hao left in January but needs to be completed. Once A005 is repaired it may be necessary for it to return to GSI to complete the scan if more statistics are found to be necessary eg. scan illuminating the back of the detector. Getting / processing data in ADF is proving to be difficult, Gilbert recommended Hao contacts Jeremie Dudouet at Lyon for assistance.

### **Future scanning plans**

Begona asked if it would be more sensible for A005 to go directly to Salamanca once it has been repaired then the Strasbourg cryostat that is currently being used for B003 could be returned to Strasbourg sooner. Gilbert Said that if the cryostat were to be returned early, it would not be used until September at the earliest due the availability of people over the summer vacation etc. It is anticipated that if A005 initially goes back to GSI, it would only be for a short time.

### **R+D on PSA**

Report received from Fraser in February, update expected on his return from LBL in early April. The work on the hypertree accelerated PSA for AGATA is progressing well, there are still some optimisations I need to make before trialling it with SIGMA, but the initial testing shows a performance improvement of ~50x over the exhaustive search used with no degradation to the prediction accuracy. The simplex PSA is now fully working on the second GPU rig at UoL, I have it configured with GitHub if we need to make any changes and I'm away at LBNL. The code is also now parallelised, so the execution rate is more amenable to real-time PSA.

### **Tracking report**

No update since last meeting.

### **Upcoming Schools/Conferences**

INTRANS Detector School 7 – 11th April 2025 @ Liverpool

25 registered participants from 6 countries.

Sponsorship from Mirion Technologies for catering. EUROLABS for travel/subsistence

Mirion Connect Conference and Research & Technology Track 28th July – 1st August 2025

<https://mirion-connect.mirion.com>

Abstract deadline 9th May

### **Performance and Simulation (M. Labiche)**

Tomography files of A005 from Strasbourg received. Converted in GDML to be included in the GEANT4 geometry.

### **Financial Reports (B. Million)**

See below the link to the report prepared by Bénédicte for the ASC

<https://u.ganil-spiral2.eu/cloud/index.php/s/SRkAHdHGc3o3aUH>

**Dissemination (J. Nyberg) :** We welcome Istvan Kuti who replace Johan for the dissemination task !

**AOB :** → Have a look to the AGATA week indico web page  
<https://indico.in2p3.fr/event/35264/>