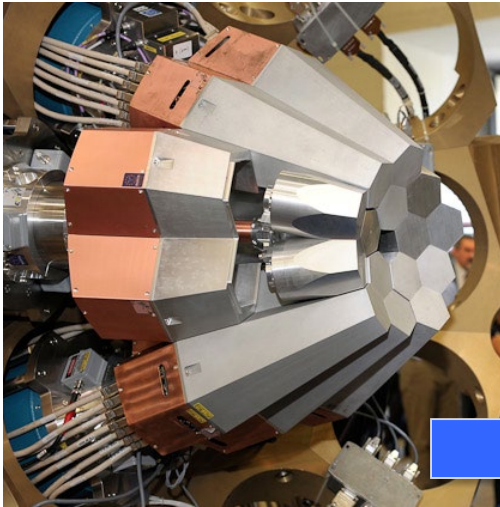


# AGATA@LNL: The coming campaign

Jose Javier Valiente Dobon  
LNL-INFN

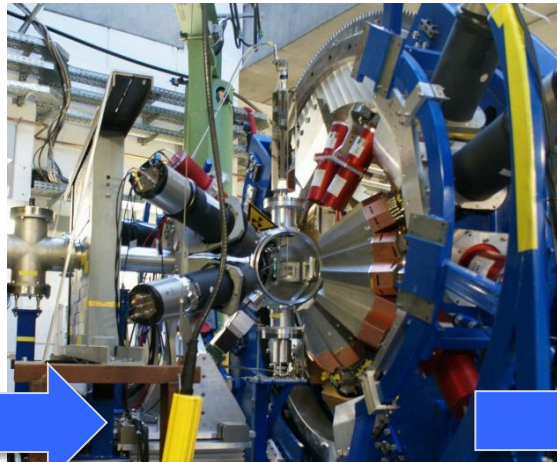
# The AGATA time line

AGATA@LNL



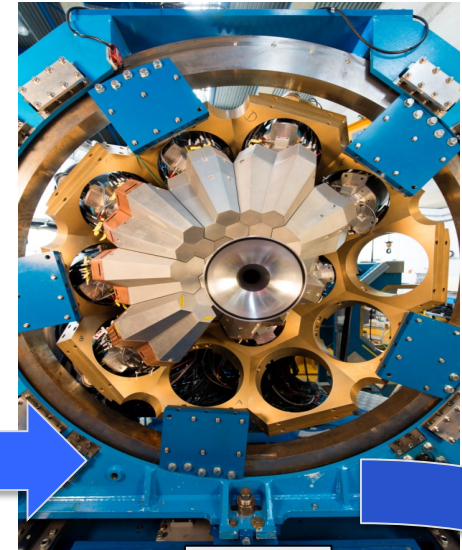
2009

AGATA@GSI



2011

AGATA@GANIL

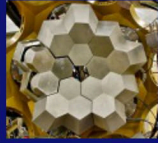


2014

LNL – 2021 installation/commissioning –  
2022 start experimental campaign

LNL: Six months from 2022 of stable beams and when available RIB from SPES 6 months RIB and 6 months stable beams. One year shut-down before the installation.

# LoI AGATA@LNL with stable beams



Workshop AGATA@LNL for stable beams

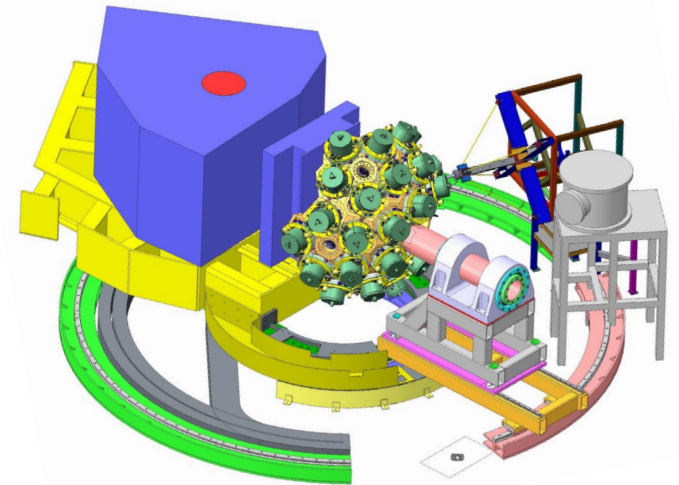
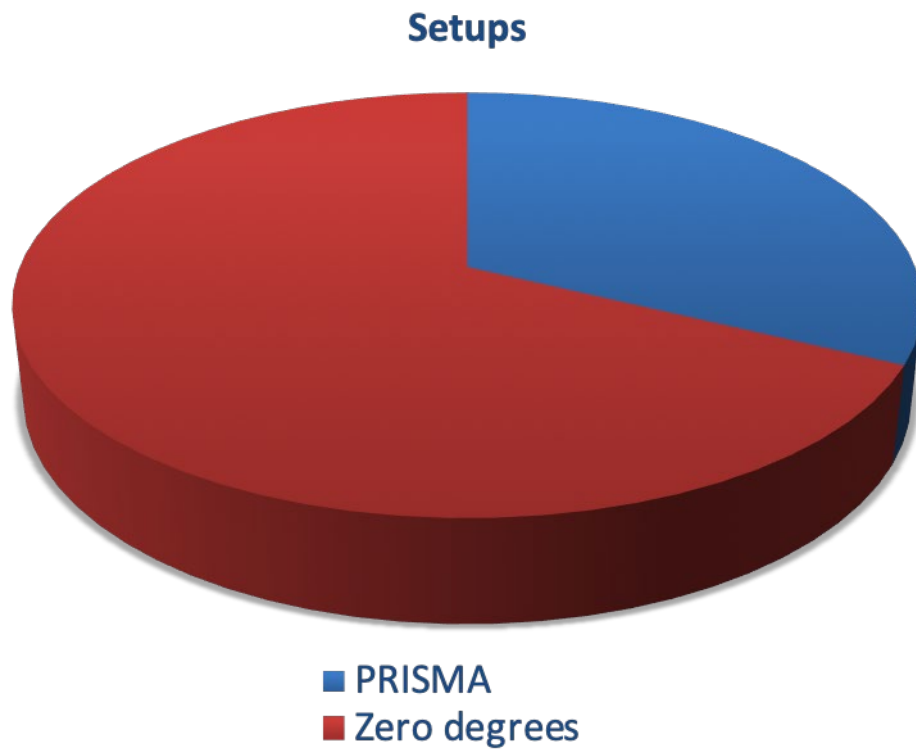
25-26 March 2019

INFN-LNL

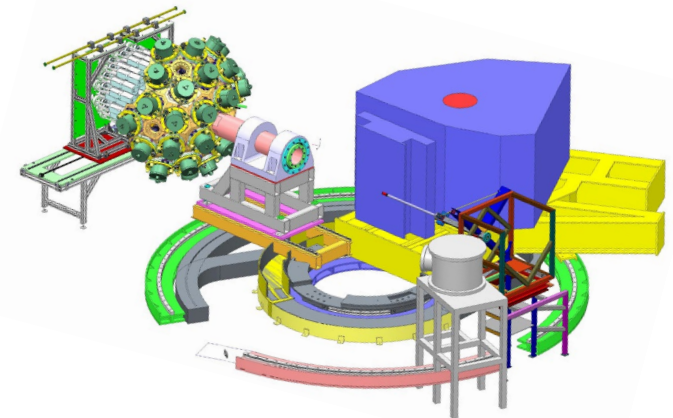
Europe/Rome timezone

- In total **60 Lols** have been received, divided among the following topics:
  - **Light Exotic Nuclei and astrophysics**  
Conveners: B. Fernandez (Santiago), C. Wheldon (Birmingham), D. Mengoni (Padova)
  - **Nuclear Resonances**  
Conveners: A. Maj (Krakow), A. Zilges (Koln), F. Crespi (Milano)
  - **Nuclear Shapes**  
Conveners: M. Zielinska (Saclay), B. Fornal (Krakow), A. Nannini (Firenze)
  - **Nuclear Shell Structure**  
Conveners: D. Verney (Orsay), P. Reiter (Koln), A. Gottardo (LNL)
  - **High-spin Physics**  
Conveners: A. Korichi (Orsay), V. Werner (Darmstadt), G. Benzoni (Milano)
  - **N=Z nuclei**  
Conveners: A. Gadea (Valencia), J. Nyberg (Uppsala), F. Recchia (Padova)
  - **Nuclear Reactions**  
Conveners: M. Caamaño (Santiago), S. Szilner (Zagreb), A. Goasduff (Padova)

# Lol distributed by setup



*Coupling with PRISMA*

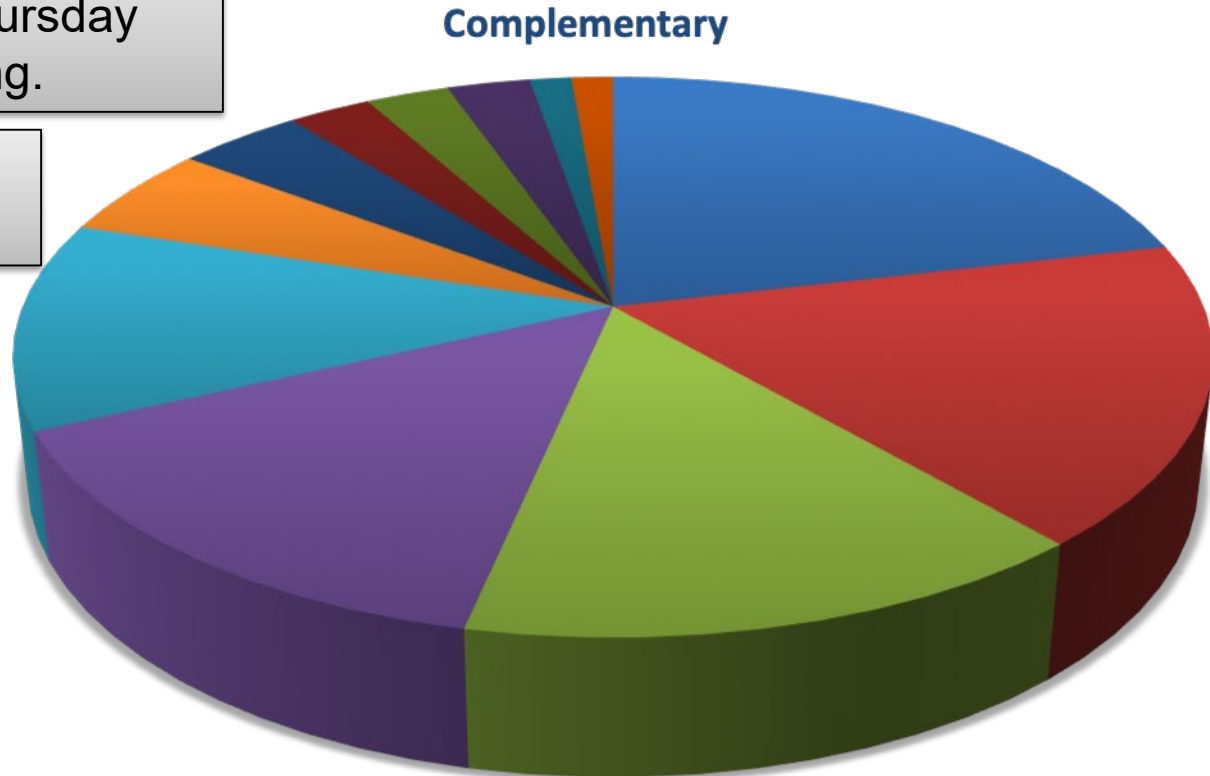


*Configuration at 0°*

# Complementary detectors

Complementary  
session Thursday  
morning.

Electronics and  
DAQ coupling



■ EUCLIDES

■ plunger

■ RFD

■ LaBR3:Ce

■ NEDA

■ PARIS

■ FATIMA

■ LEPS

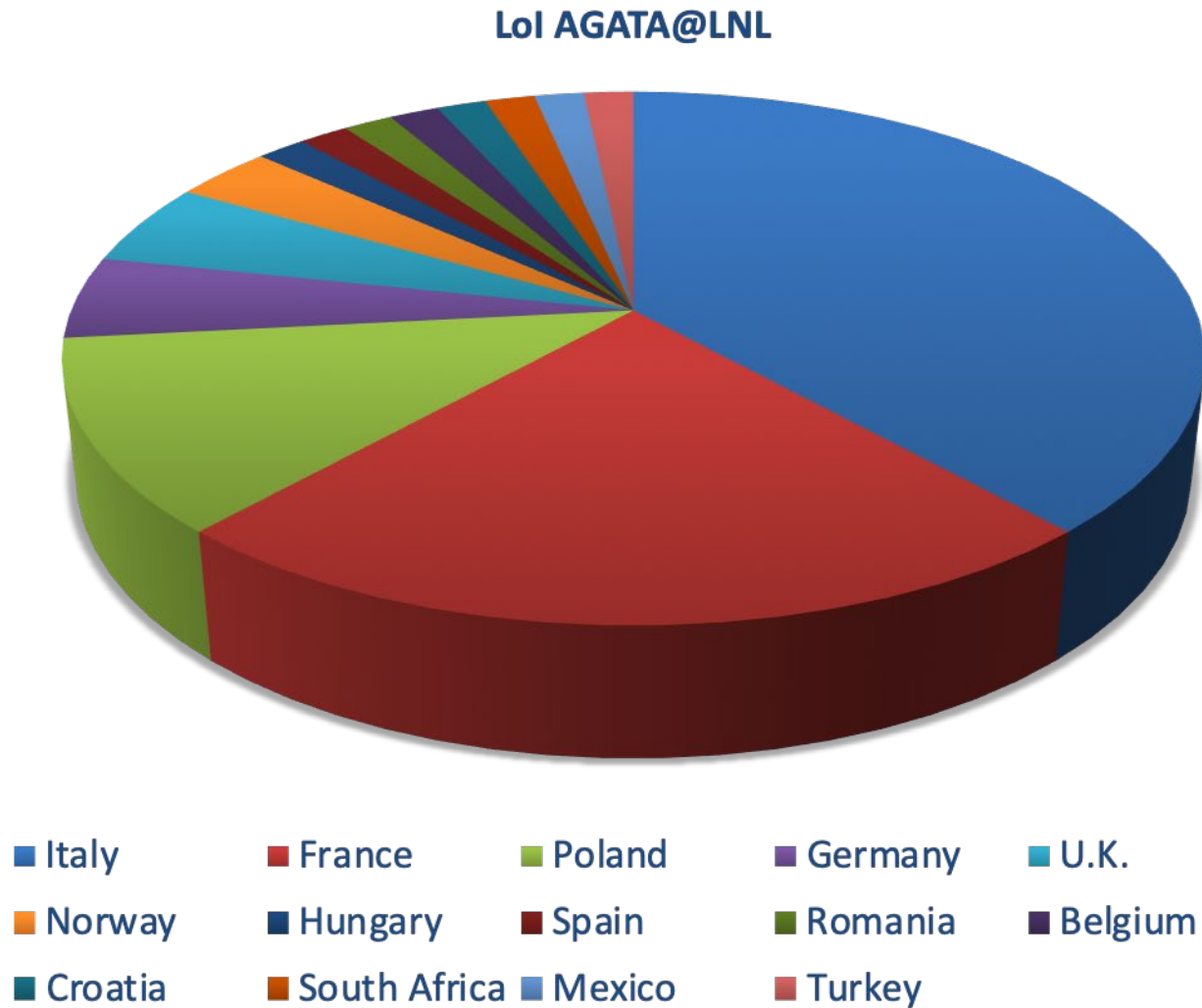
■ TRACE/GRIT/MUGAST

■ SPIDER

■ SUGAR

■ Electron conversion

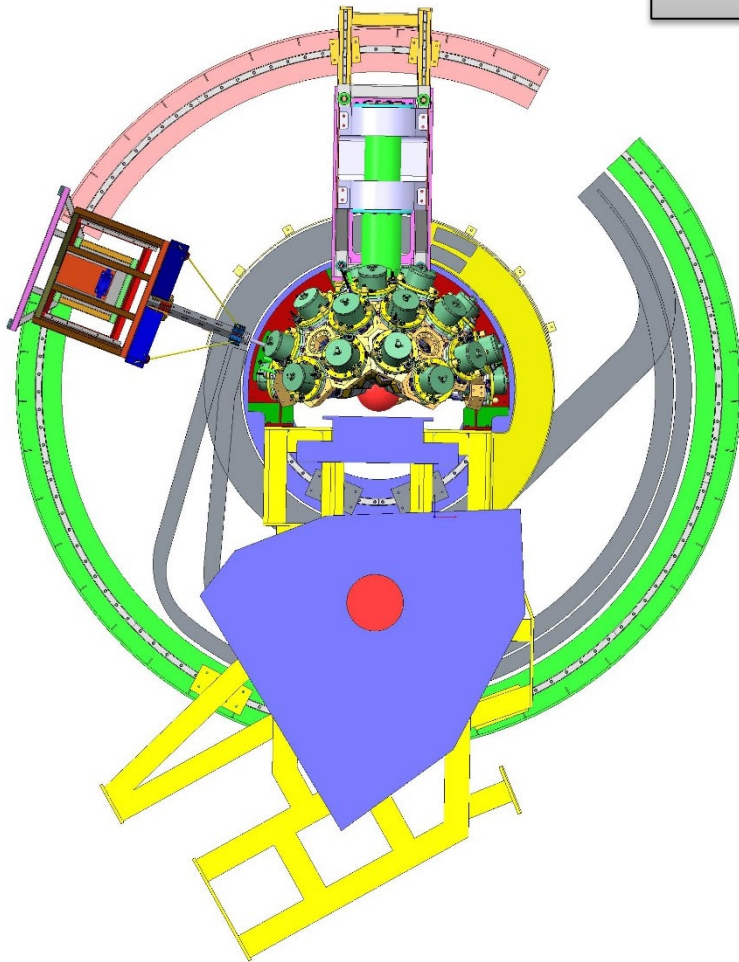
# Lol per country



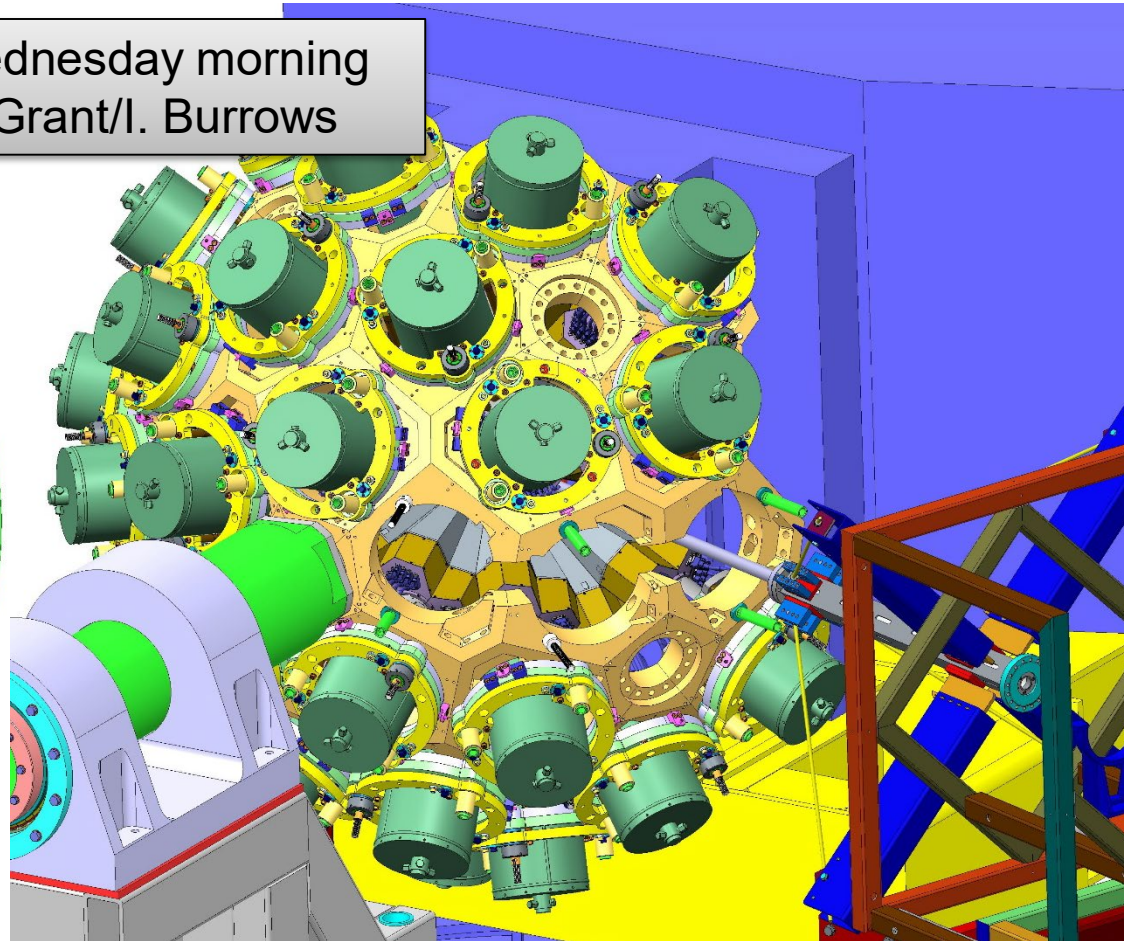


# Setup AGATA+PRISMA

70 degrees.

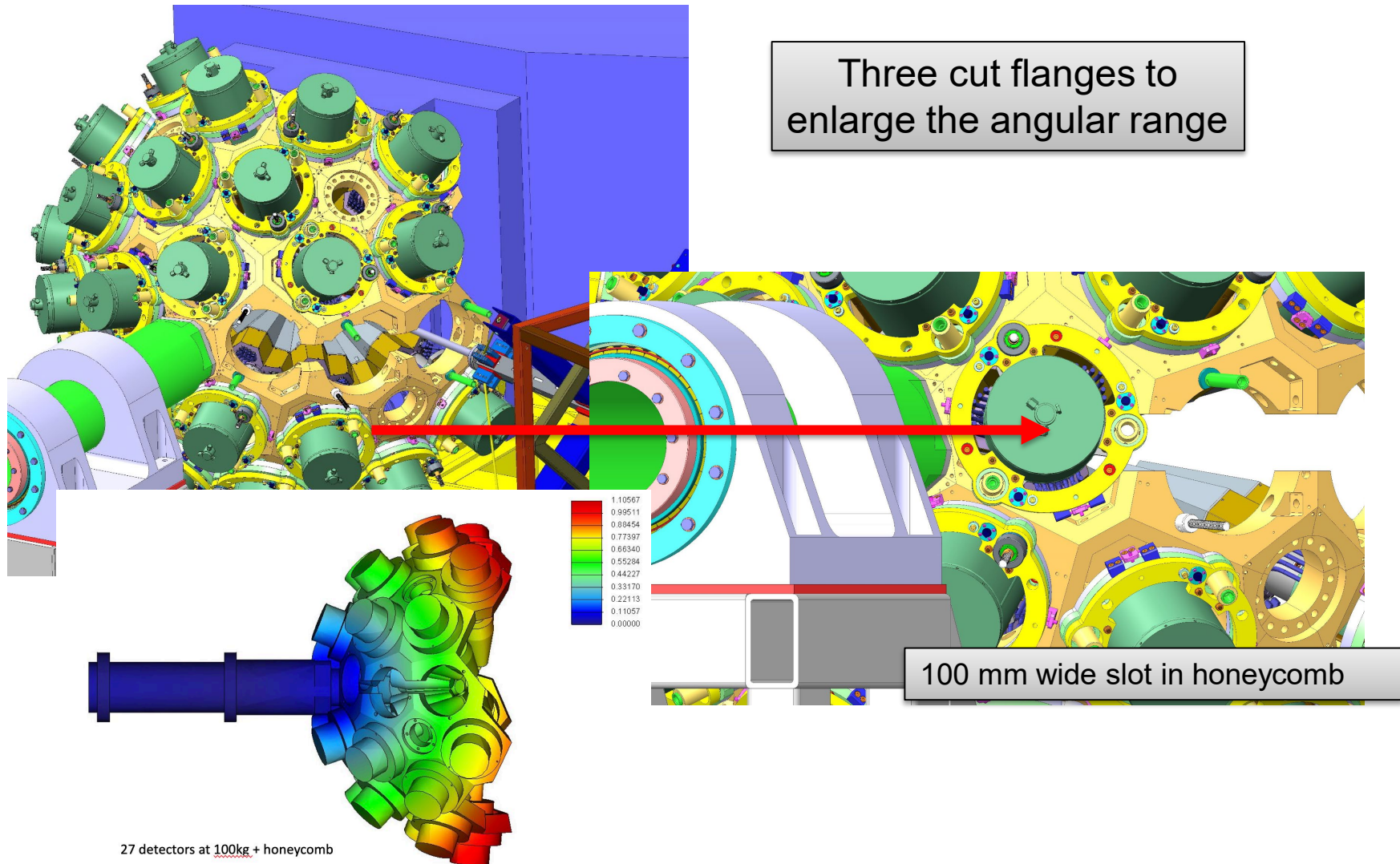


Wednesday morning  
A. Grant/I. Burrows



Dedicated sessions to the installation  
and infrastructures at LNL

# Angular range AGATA@PRISMA





# Setup Zero-degrees

Refurbishing of the beam line and new quadrupole

Existing cave walls

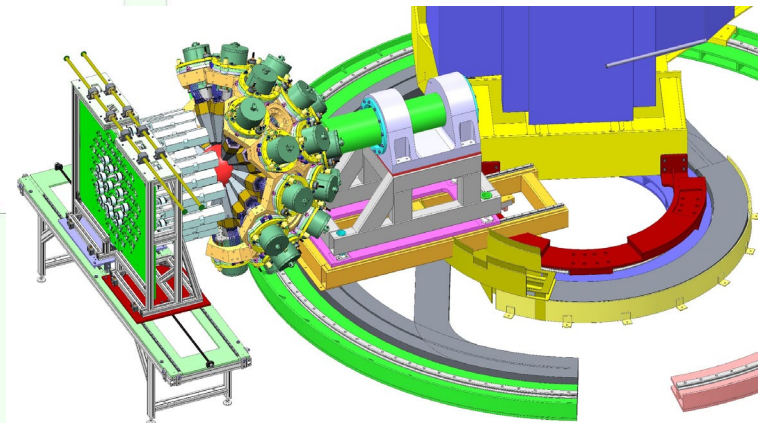
**AGATA with NEDA**

AGATA can slide back for target chamber access

NEDA can open for target chamber access

Target moved ~4m downstream

NEDA



# AGATA collaboration

## Digital electronics

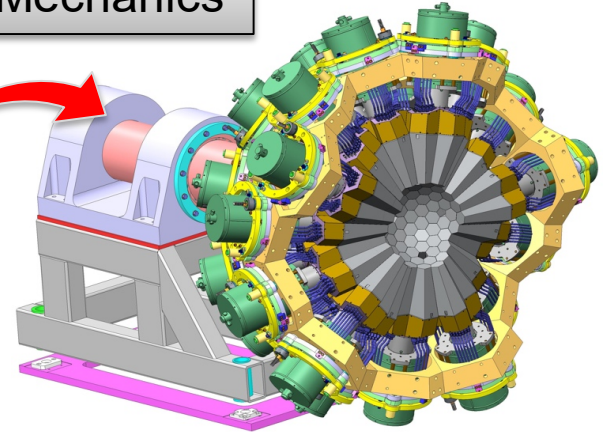
**DIGITIZERS**

**ADC Card**

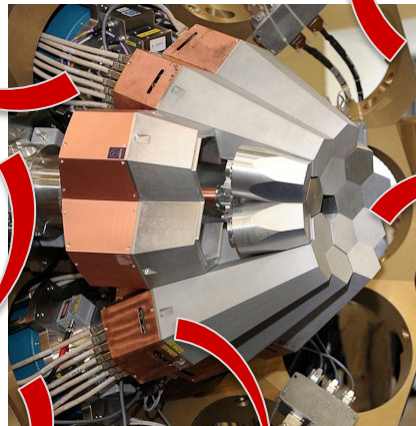
**Control Card**

**GGP Card**

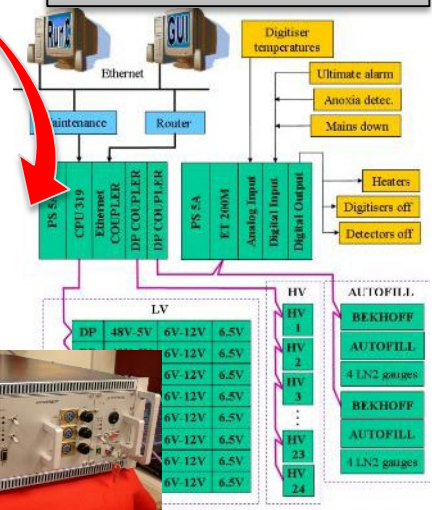
## Mechanics



## DAQ



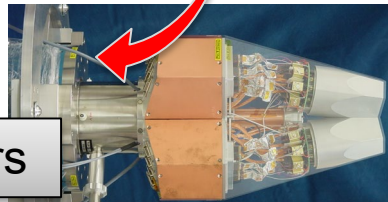
## Infrastructures



## Expertise



## Detectors



# Document Working together

AGATA at LNL: Working Together Guidelines. Version 0.1 2019



**AGATA Management Board**

Almost ready. To be discussed in the coming MB meetings.

**Guidelines for Working Together during the Installation and Deployment of AGATA at LNL.**

**DRAFT**

**Work Document**

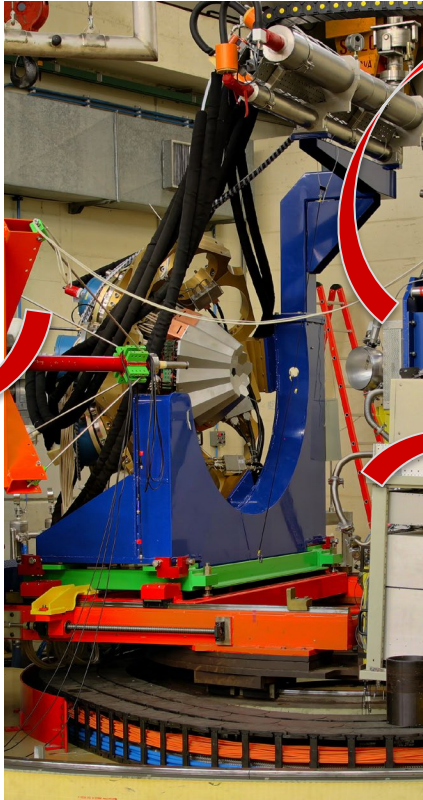
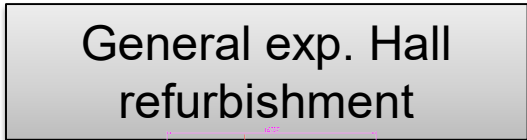
**Version 0.1, 2019**

**Contributors: A. Gadea, J.J. Valiente-Dobón**

- Task 1, Infrastructure**
- Task 2, AGATA Mechanics**
- Task 3, Experimentation mechanics**
- Task 4, Safety and Quality**
- Task 5, Processing and DAQ infrastructures**
- Task 6, Surveyor**
- Task 7, Detectors**
- Task 8, DAQ-Electronics**
- Task 9, Complementary instrumentation**
- Task 10, Performance**
- Task 11, Exploitation**
- Task 12, Data Analysis**
- Task 13, Logistics**
- Task 14, Documentation**
- Task 15, Public exposure of AGATA activities**



DAQ/Preprocessing room



LN<sub>2</sub> infrastructure  
Water cooling  
UPS  
Cabling



# LNL/PD/MI involvement to host AGATA

## **Divisione Ricerca LNL**

- DAQ + network → support first intervention
- Targets
- Infrastructures in exp. hall: cabling, vacuum, etc.
- Detector laboratory
- Global survey of the array including LN2 filling procedure on a 24/7 basis
- LN2 system maintenance
- Laser tracker surveyors

## **Servizio progettazione e officina meccanica Padova**

- Design of mechanical supports for array + DSS + beam line
- Construction and mounting
- detector mounting/dismounting

## **Servizio progettazione e Officina meccanica Milano**

- Design/Construction/installation reaction chamber

## **Divisione Tecnica LNL**

- Electric Power/UPS
- New Computing room (DAQ/Pre-processing)
- Side services (air conditioning in the hall, water, etc)

# LNL/PD/MI involvement to host AGATA

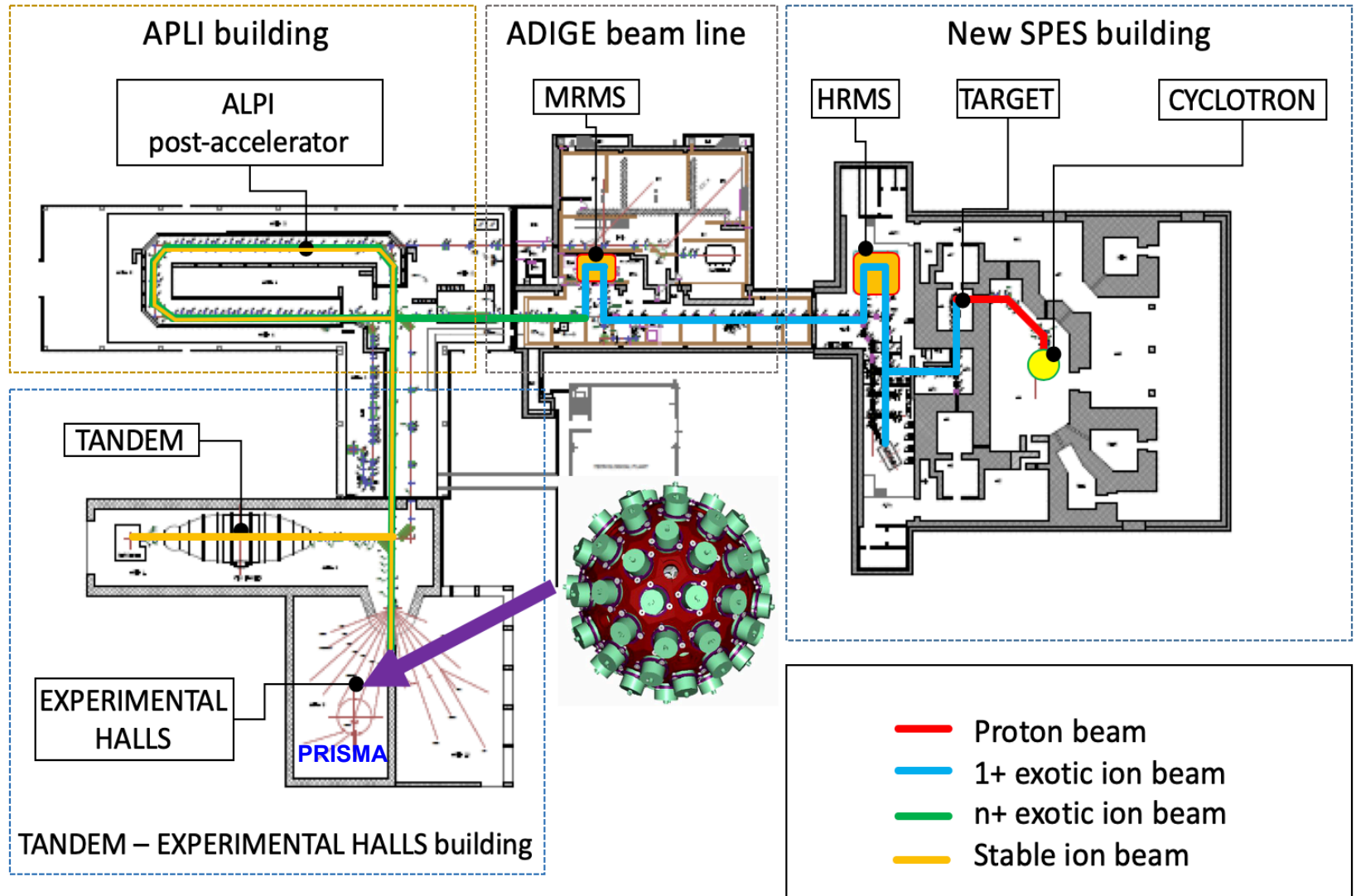
## **Divisione Acceleratori LNL**

- Beamline optimization (Two configurations: Prisma & Neda)
- Production and development of ion beams ( $^{14}\text{C}$ ,  $^{238}\text{U}$ ,  $^{204}\text{Hg}$ )

## **Serv. Safety and environment LNL**

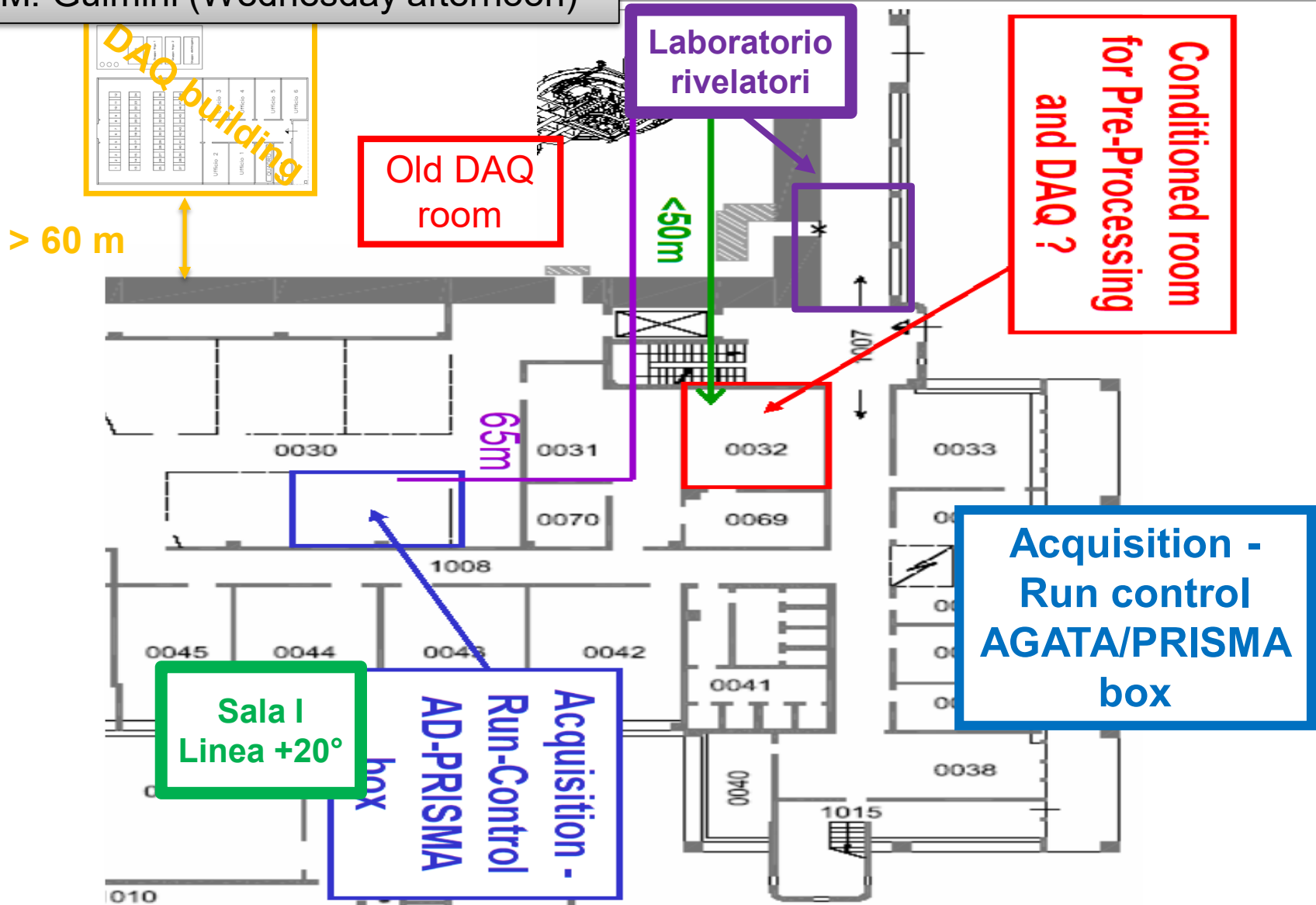
- New targets  $^3\text{H}$ ,  $^{9,10}\text{Be}$ ,  $^{232}\text{Th}$ ,  $^{238}\text{U}$
- Safety LN2, xylene, cabling and crane handling.

# AGATA location @ LNL



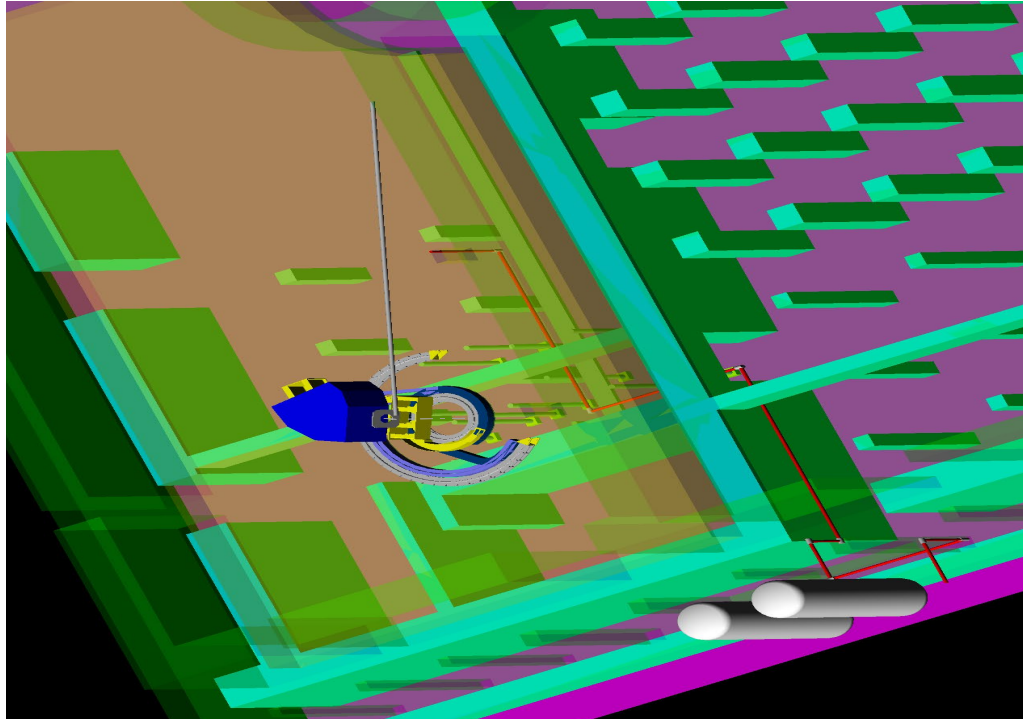
# The places of AGATA

M. Gulmini (Wednesday afternoon)





# LN2 AGATA

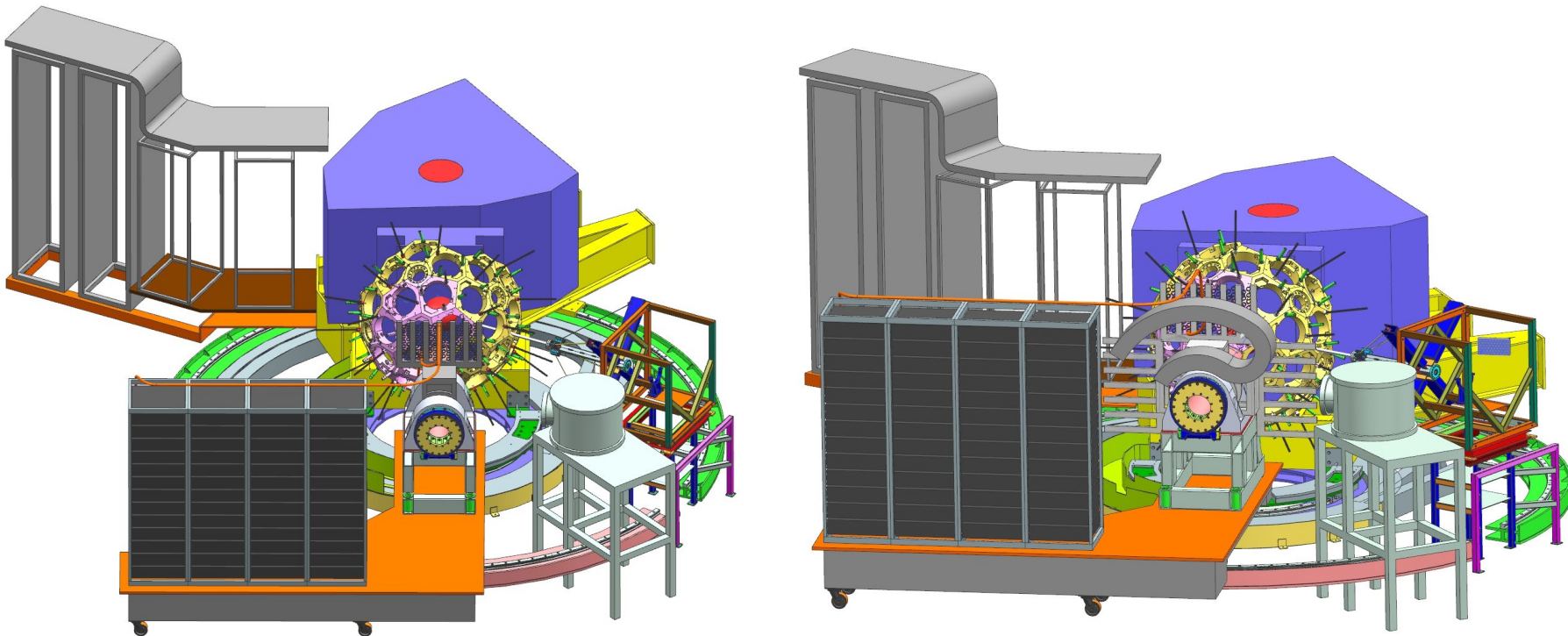


Talk R. Menegazzo  
Wednesday morning

- Find synergies for both setups
- Dedicated external LN2 tank at 2 bars
- Usage of 2 buffer tanks (300 l) at the experimental hall dedicated to 15 detectors each?
- One unique line for the 2 buffer tanks

# Mechanics for AGATA DSS

Talk by N. Bez Wednesday afternoon AGATA+DSS



- Racks for the digitizers (within 10 meters). Rotation and translation.
- Second rack for LN2, HV, etc

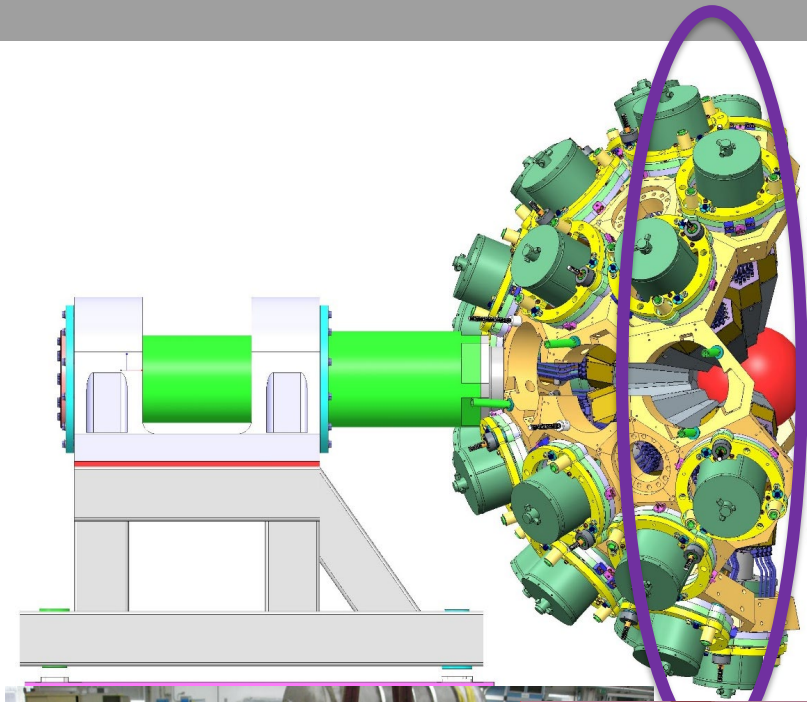
# Detector Laboratory



- a pumping system to regenerate the vacuum of 2 ATC cryostats simultaneously;
- a HPGe detector cooling system with LN<sub>2</sub> autofill control hardware and software;
- LV and HV power supplies for HPGe detectors;
- a data acquisition system (MCA type);
- an UPS system.



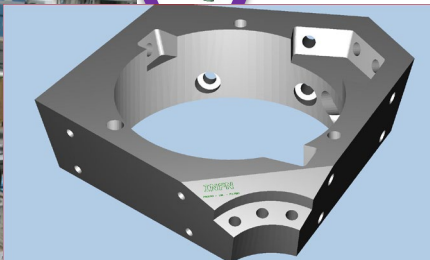
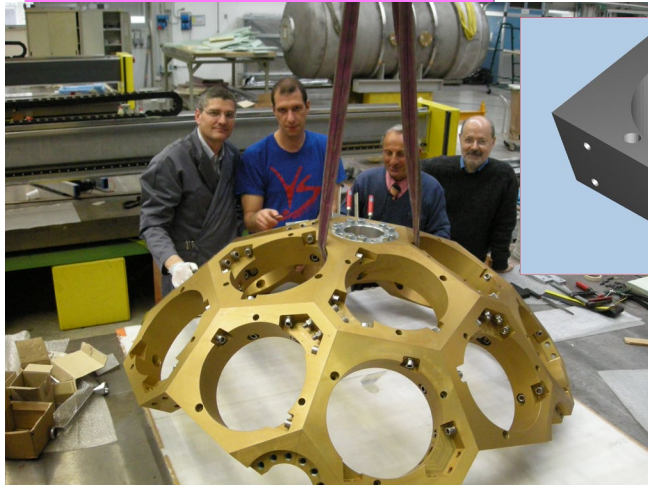
# AGATA Flanges



**Previous mechanics:** Mi/PD/LNL (know-how)

**Mechanical completion  $2\pi$**

Production Padova/LNL of 15 full flanges + 3 cut ones + spares

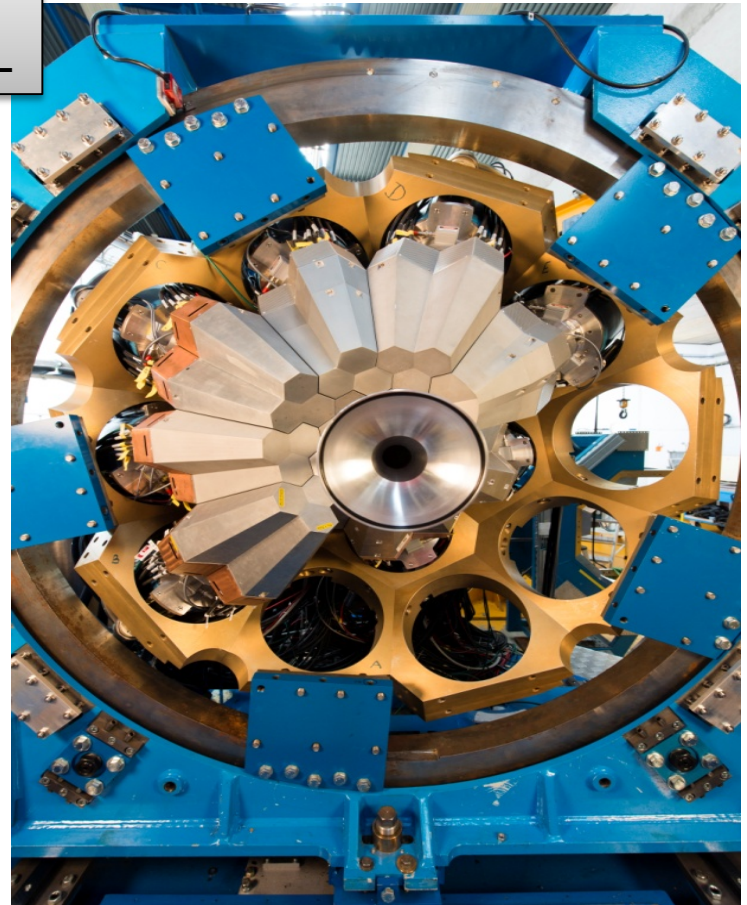




# Learning from recent experience ...

Visit within 2019 with  
technical staff to GANIL

- water cooling for the digitizers
- Cabling is a nightmare.
- LN2 cooling; With 15 clusters, there is a problem every 2-3 days;
- the power plug interface were always a problem (never the anticipated format)
- GRID access or other?



# Summary

- AGATA workshop at LNL: sixty LoI for stable beams
  - Setup with the PRISMA spectrometer
  - Setup at zero degrees
- Commissioning end 2021, experimentation 2022
- Ready document working together
- Involvement LNL/PD/MI for the installation (mechanics, vacuum, LN2, safety, ...)
- New DAQ/preprocessing room
- Production of new flanges to complete  $2\pi$
- Looking forward to experiments at LNL with AGATA

END