

# Update on the annular silicon detector for (n,cp) measurements and next steps

# What's new from last meeting

- Completed the analysis of the 2021 test in EAR1.
- **Approved proposal** for EAR1&EAR2 (15e17+5e17 protons on target) to continue the characterization of the setup (3e17+5e17) and measure the  $^{12}\text{C}(n,p)$  cross section to validate the technique(12e17).
- Performed a **short test in EAR2** (15minutes of beam time) without any sample.
- Ongoing effort on the Pulse Shape routine (see Gianfranco talk).

# What's new from last meeting

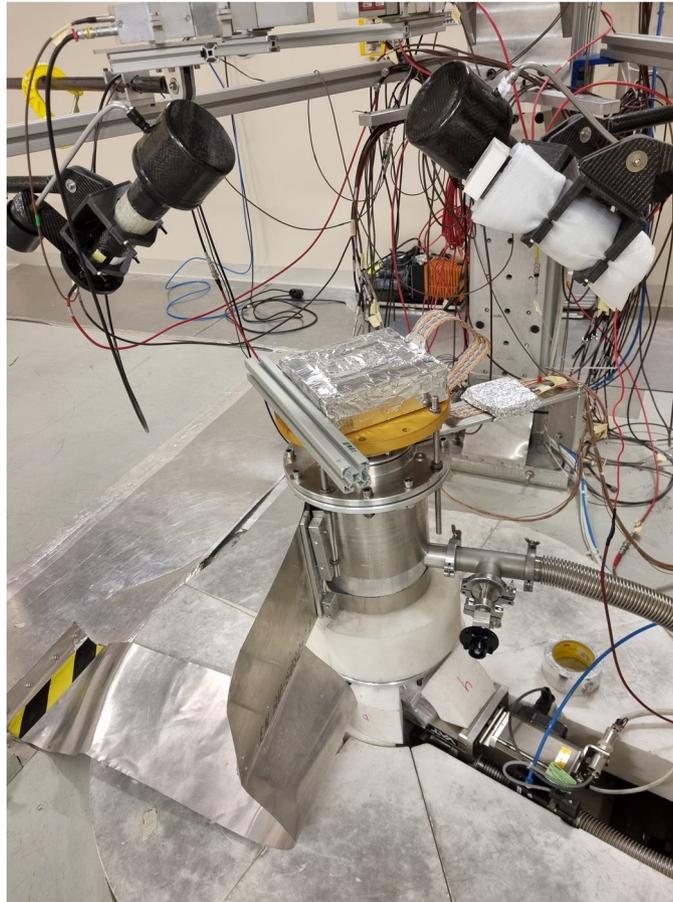
- Completed the analysis of the 2021 test in EAR1.
- **Approved proposal** for EAR1&EAR2 (15e17+5e17 protons on target) to continue the characterization of the setup (3e17+5e17) and measure the  $^{12}\text{C}(n,p)$  cross section to validate the technique(12e17).
- Performed a **short test in EAR2** (15minutes of beam time) without any sample.
- Ongoing effort on the Pulse Shape routine (see Gianfranco talk).

# What's new from last meeting

- Completed the analysis of the 2021 test in EAR1.
- **Approved proposal** for EAR1&EAR2 (15e17+5e17 protons on target) to continue the characterization of the setup (3e17+5e17) and measure the  $^{12}\text{C}(n,p)$  cross section to validate the technique(12e17).
- Performed a **short test in EAR2** (15minutes of beam time) without any sample.
- Ongoing effort on the Pulse Shape routine (see Gianfranco talk).

# EAR2 test

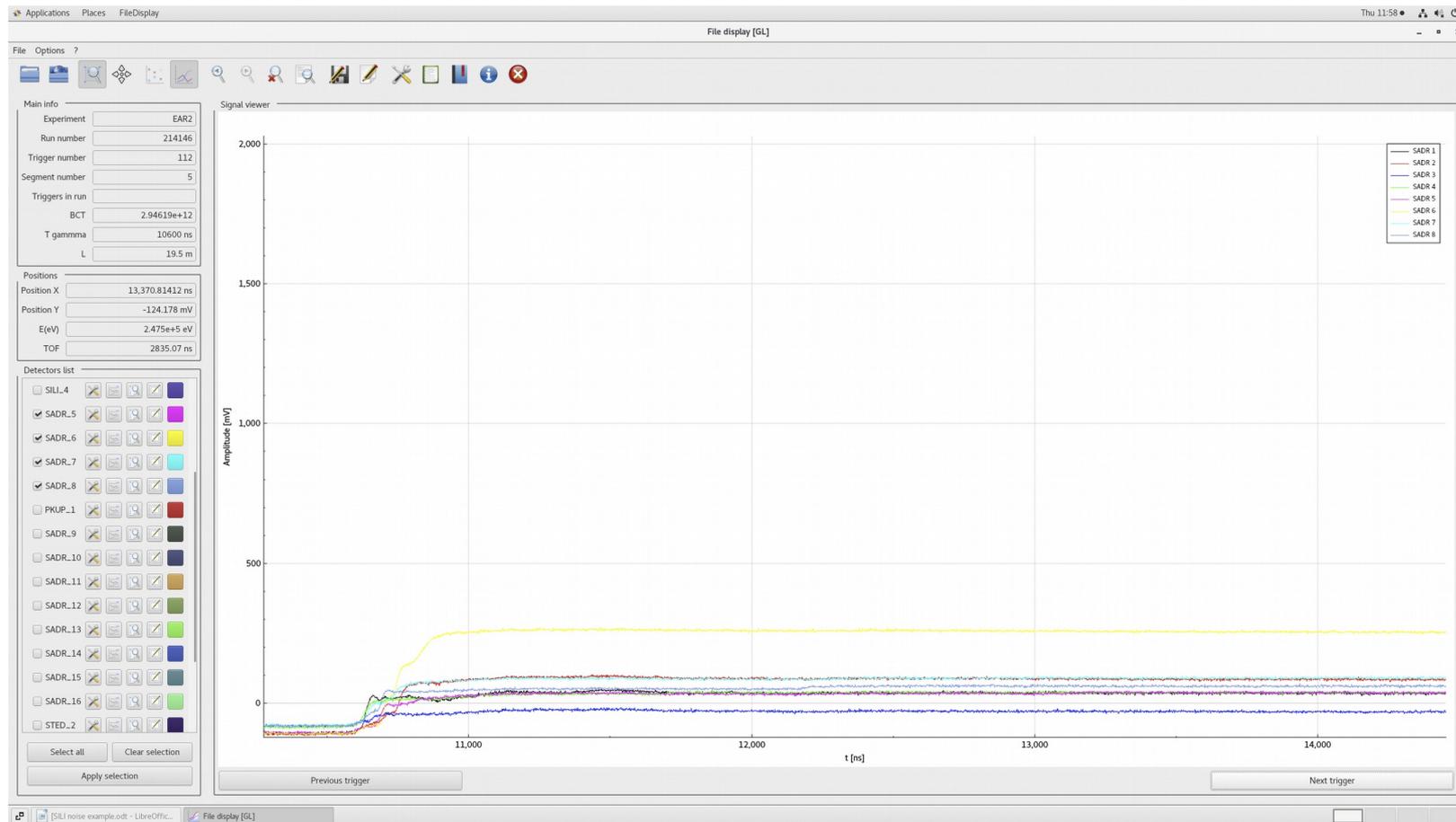
16 channels, empty target (thin aluminum) in SiMon2 position.



# EAR2 test

Parasitic

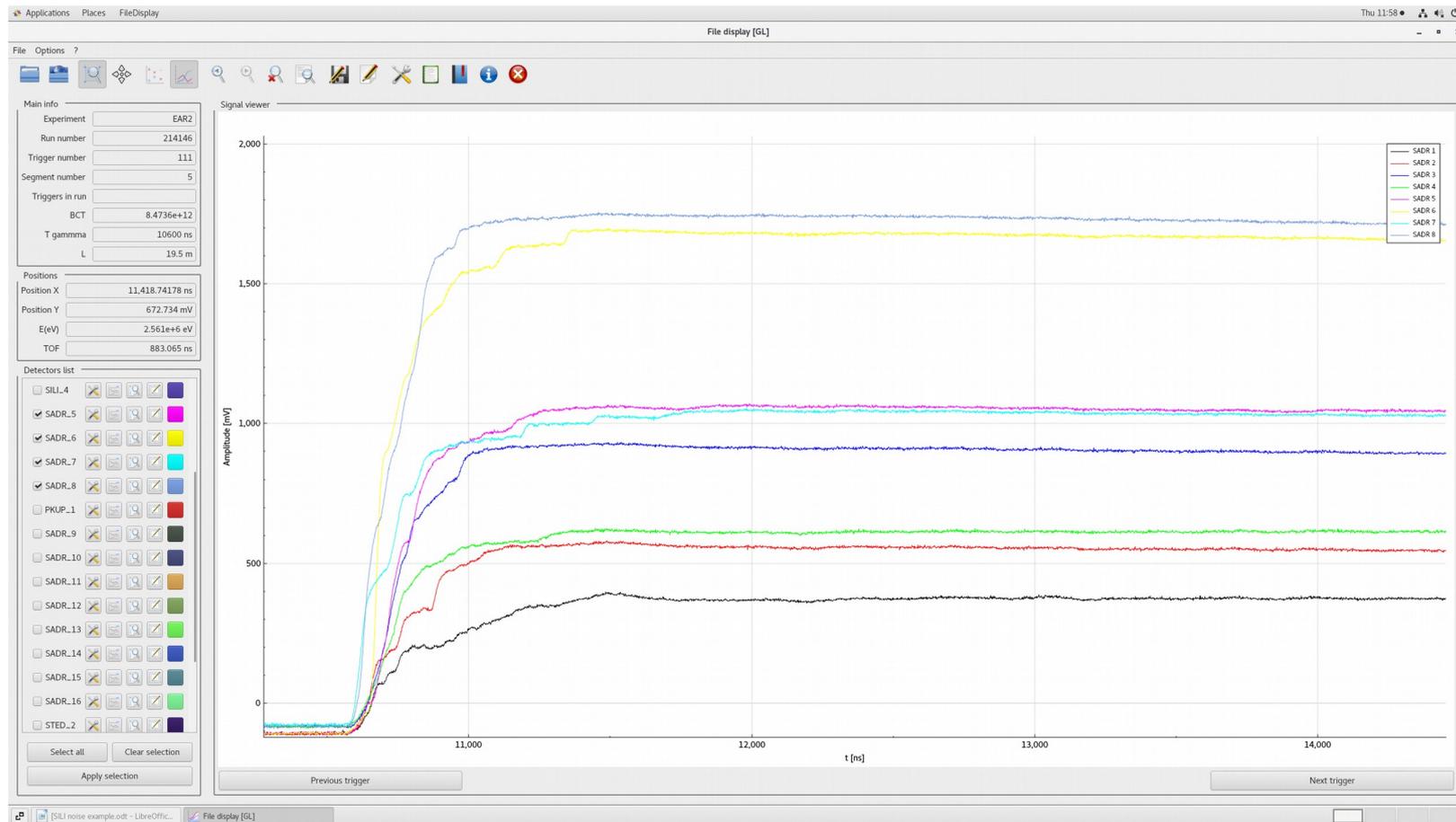
16 channels, empty target (thin aluminum) in SiMon2 position.



# EAR2 test

Dedicated

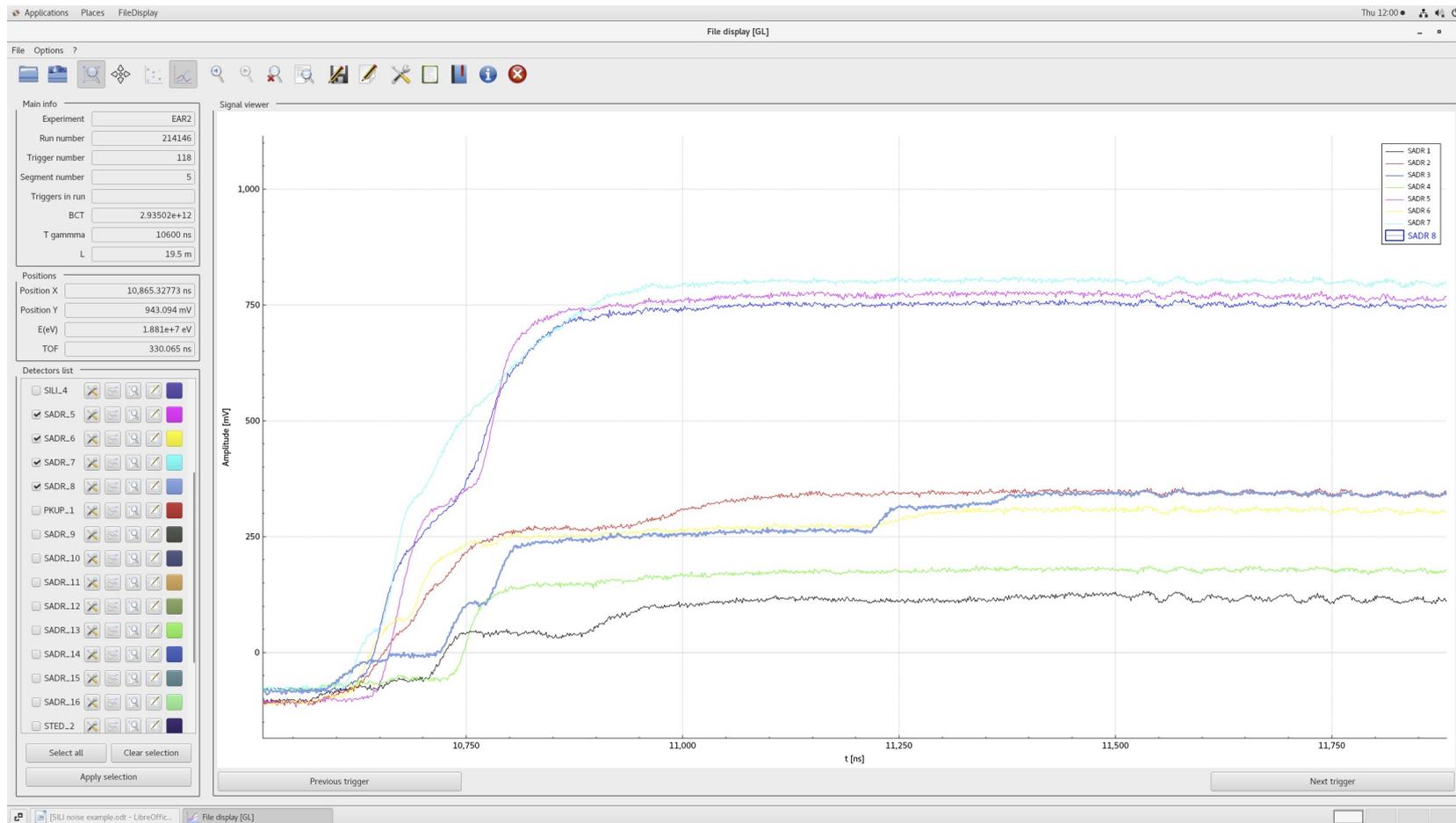
16 channels, empty target (thin aluminum) in SiMon2 position.



# EAR2 test

Parasitic

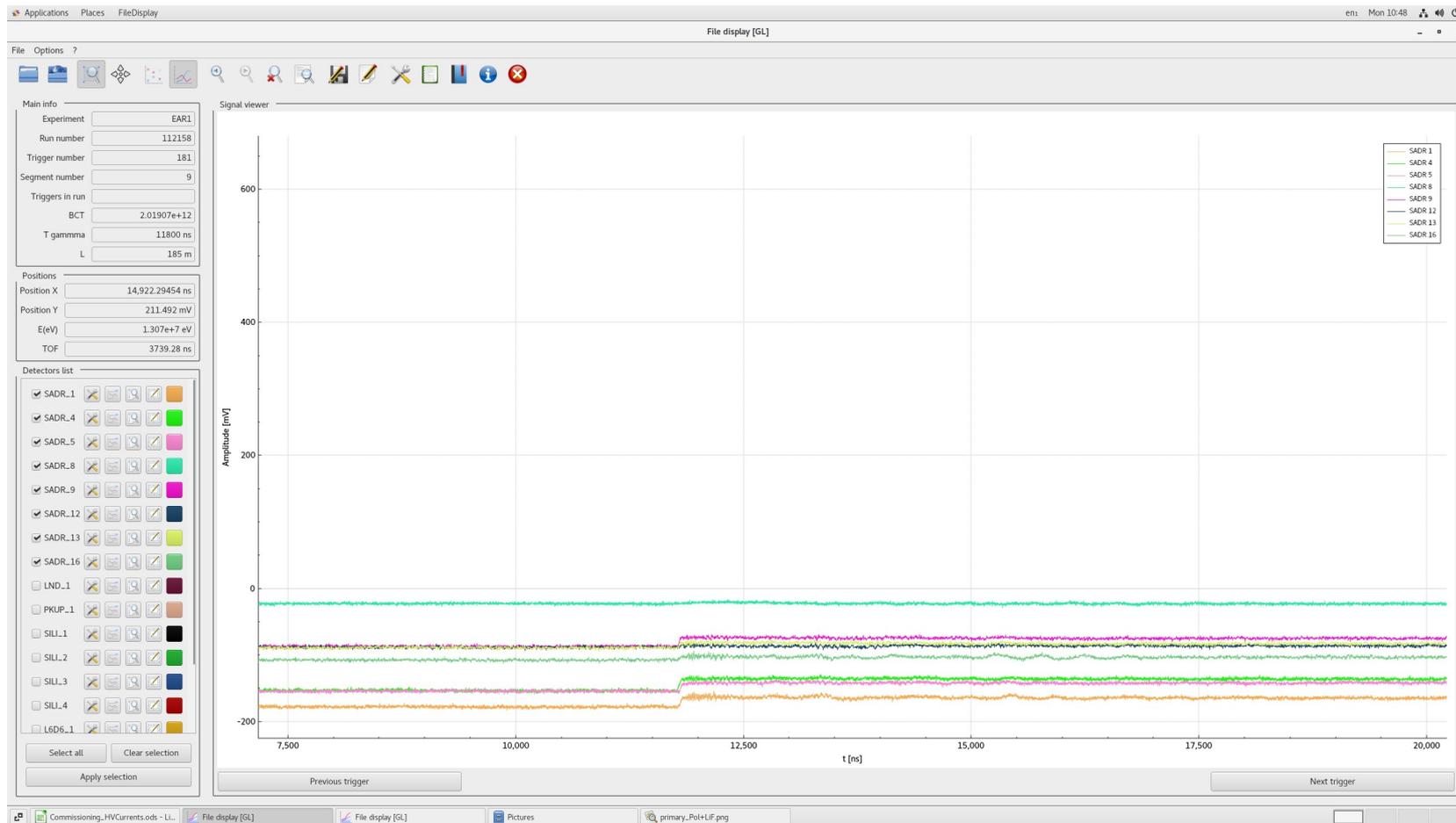
16 channels, empty target (thin aluminum) in SiMon2 position.



# 2021 EAR1 test

Parasitic

Same empty target (thin aluminum).

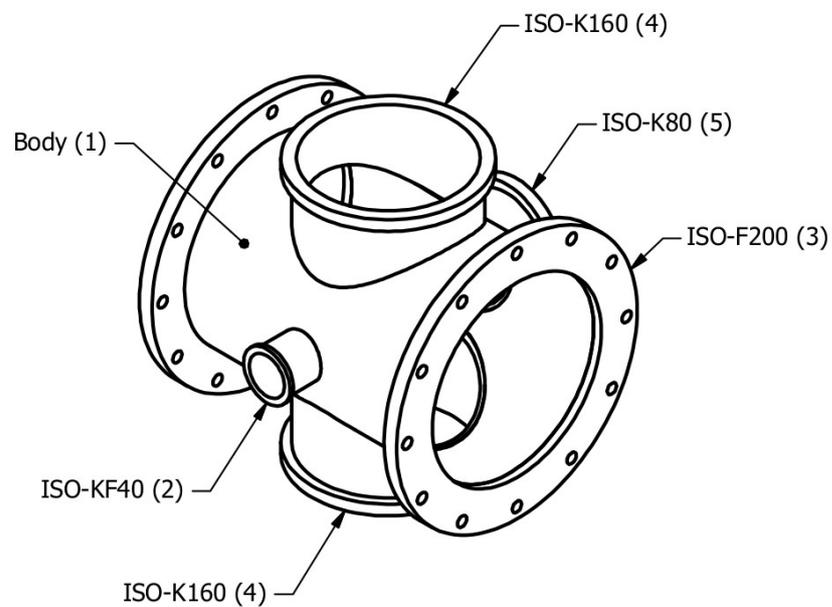


# What's new from last meeting

- Completed the analysis of the 2021 test in EAR1.
- **Approved proposal** for EAR1&EAR2 (15e17+5e17 protons on target) to continue the characterization of the setup (3e17+5e17) and measure the  $^{12}\text{C}(n,p)$  cross section to validate the technique(12e17).
- Performed a **short test in EAR2** (15minutes of beam time) without any sample.
- Ongoing effort on the Pulse Shape routine (see Gianfranco talk).

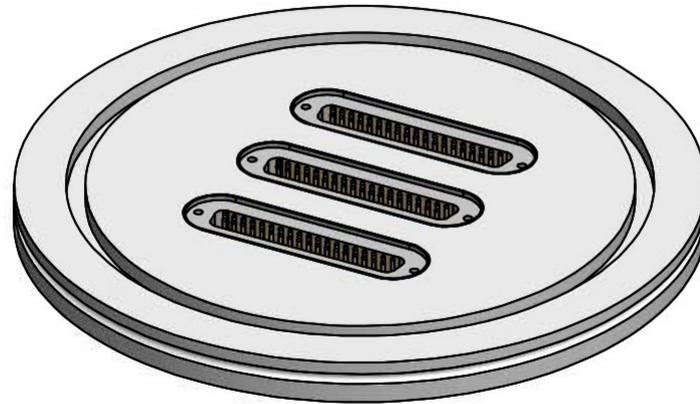
# Status of Hardware

- New **vacuum chamber** at CERN, tested for vacuum.



# Status of Hardware

- New **vacuum chamber** at CERN, tested for vacuum.
- Custom **flange with connectors** bought from INFN-BO, at CERN at the beginning of October.



# Status of Hardware

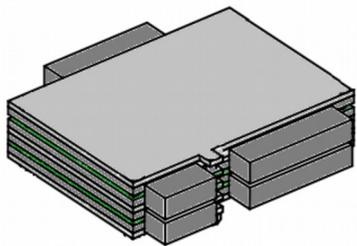
- New **vacuum chamber** at CERN, tested for vacuum.
- Custom **flange with connectors** bought from INFN-BO, at CERN at the beginning of October.
- **Board under development** at LNS, tight time, we hope to have it for the test in november but it is not sure.
- **Mechanical support** for the detector is being designed by Oscar, expecting to be ready for November test.
- New low gain preamplifier currently being delivered at LNS.
- New square stripped silicon bought from INFN-BO.

# Status of Hardware

- New **vacuum chamber** at CERN, tested for vacuum.
- Custom **flange with connectors** bought from INFN-BO, at CERN at the beginning of October.
- **Board under development** at LNS, tight time, we hope to have it for the test in november but it is not sure.
- **Mechanical support** for the detector is being designed by Oscar, expecting to be ready for November test.
- New low gain preamplifier currently being delivered at LNS.
- New square stripped silicon bought from INFN-BO.

# Status of Hardware

- New **vacuum chamber** at CERN, tested for vacuum.
- Custom **flange with connectors** bought from INFN-BO, at CERN at the beginning of October.
- **Board under development** at LNS, tight time, we hope to have it for the test in november but it is not sure.
- **Mechanical support** for the detector is being designed by Oscar, expecting to be ready for November test.
- New low gain preamplifier currently being delivered at LNS.



# Status of Hardware

- New **vacuum chamber** at CERN, tested for vacuum.
- Custom **flange with connectors** bought from INFN-BO, at CERN at the beginning of October.
- **Board under development** at LNS, tight time, we hope to have it for the test in november but it is not sure.
- **Mechanical support** for the detector is being designed by Oscar, expecting to be ready for November test.
- New low gain preamplifier currently being delivered at LNS.
- New square stripped silicon bought from INFN-BO.

# Short term plan

- **13-14 October test in EAR2** with samples and different preamplifiers.
- **Test in the n\_TOF LAB** to further characterize the detectors with alpha source, collecting data for the Pulse Shape routine at the same time.
- **Get ready for the test in EAR1 at the end of the year** (mechanical support and board are the critical aspects).
- The PTB team agreed to have us in **parasitic during the DDX test** (we will stay behind the TAC), if the average proton on target will be stable we will also have a **couple of days to work in dedicated** (capture position).

# Short term plan

- **13-14 October test in EAR2** with samples and different preamplifiers.
- **Test in the n\_TOF LAB** to further characterize the detectors with alpha source, collecting data for the Pulse Shape routine at the same time.
- **Get ready for the test in EAR1 at the end of the year** (mechanical support and board are the critical aspects).
- The PTB team agreed to have us in **parasitic during the DDX test** (we will stay behind the TAC), if the average proton on target will be stable we will also have a **couple of days to work in dedicated** (capture position).

# Short term plan

- **13-14 October test in EAR2** with samples and different preamplifiers.
- **Test in the n\_TOF LAB** to further characterize the detectors with alpha source, collecting data for the Pulse Shape routine at the same time.
- **Get ready for the test in EAR1 at the end of the year** (mechanical support and board are the critical aspects).
- The PTB team agreed to have us in **parasitic during the DDX test** (we will stay behind the TAC), if the average proton on target will be stable we will also have a **couple of days to work in dedicated** (capture position).

# Short term plan

- **13-14 October test in EAR2** with samples and different preamplifiers.
- **Test in the n\_TOF LAB** to further characterize the detectors with alpha source, collecting data for the Pulse Shape routine at the same time.
- **Get ready for the test in EAR1 at the end of the year** (mechanical support and board are the critical aspects).
- The PTB team agreed to have us in **parasitic during the DDX test** (we will stay behind the TAC), if the average proton on target will be stable we will also have a **couple of days to work in dedicated** (capture position).

# Long term plan

- Get ready for the  $^{12}\text{C}(n,p)$  cross section measurement to be performed in EAR1 in the first month of 2023 campaign (April-June?).

# Status of SiMon and SiMon2 analysis

## What's new:

- Refined analysis
  - Differentiating between High Intensity Dedicated, Low Intensity Dedicated and Parasitic
  - Correction for small gain shift run per run
  - Correction for PKUP-tflash run per run
- Final threshold for particle identification
- Pileup correction

## What's left to do:

- Refine gflash identification
- Run MC simulations
- Use of the transport code for EAR2 and final flight path calibration