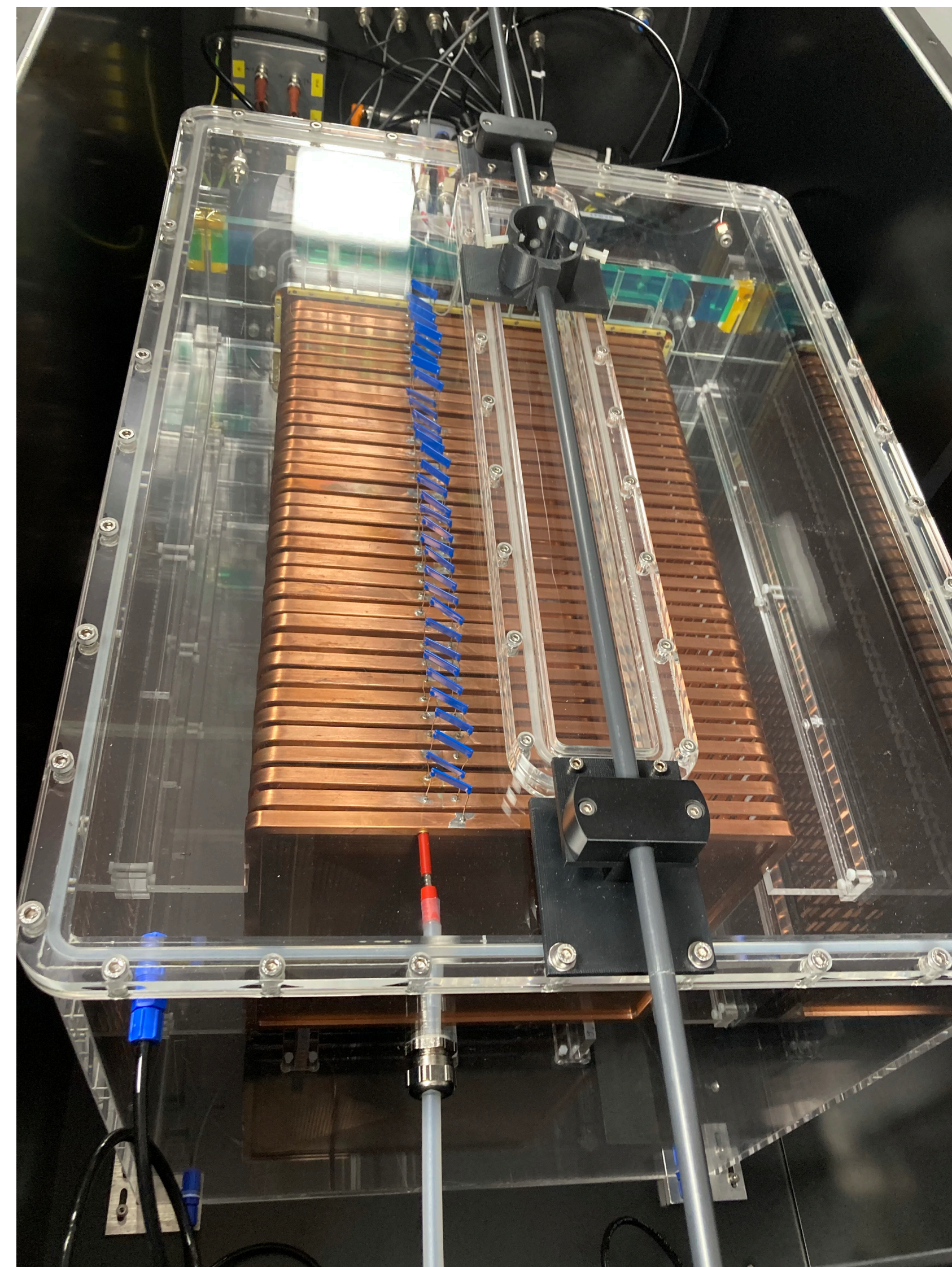


RUN 4 plans before closure

Stefano Piacentini

General Meeting

07/03/2024



RUN 4 - To do list before closure

- Test the detector at **low gain**: less saturation towards the underground neutrons measurements
 - ➡ Define the best condition for RUN5
 - ➡ Possible test new solutions to suppress saturation
- Test a new **radon** filter to be installed in the next weeks
- Test the loss of LY with a **higher nitrogen** gas flow
- **Constraints:**
 1. LIME operations will be stopped by December 31st, 2024
 2. RUN5 duration at least 6-8 months
 3. Water shielding uninstallation \sim 15 days

RUN 4 - To do list before closure

- Test the detector at **low gain**: less saturation towards the underground neutrons measurements

➡ Define the best condition for RUN5

➡ Possible test new solutions to suppress saturation

- ▶ Long data taking campaign aimed at **measuring the underground neutrons**.
- ▶ Very **low** expected **event rate** \sim **100 neutron recoils / month** in LIME integrated on the whole energy spectrum (\sim a half of the events in the $E > 20\text{keV}$ range)

- **Constraints:**

1. LIME operations will be stopped by December 31st, 2024

2. RUN5 duration at least 6-8 months

3. Water shielding uninstallation \sim 15 days

RUN 4 - To do list before closure

- Test the detector at **low gain**: less saturation towards the underground neutrons measurements
 - ➡ Define the best condition for RUN5
 - ➡ Possible test new solutions to suppress saturation
- Test a new **radon** filter to be installed in the next weeks



It is going to be assembled in the next days:

- ▶ We have 120 cc of radon molecular sieve.
- ▶ The case for this material is going to be assembled at LNF
- ▶ The case will be filled with the molecular sieve using a glove box at RM1

RUN 4 - The plan

05/03/2024	Low Gain [400-400-400]
06/03/2024	Low Gain [400-400-400]
07/03/2024	Low Gain [400-400-400]
08/03/2024	Low Gain [400-400-400]
09/03/2024	Fast Scans
10/03/2024	Fast Scans
11/03/2024	Fast Scans
12/03/2024	Standard [440-440-440]
13/03/2024	Standard [440-440-440]
14/03/2024	Add the radon filter
15/03/2024	Standard [440-440-440]
16/03/2024	Standard [440-440-440]
17/03/2024	Standard [440-440-440]
18/03/2024	Standard [440-440-440]
19/03/2024	Standard [440-440-440]
20/03/2024	Standard [440-440-440]

Long low gain campaign with GEMs at 400V
- 400V - 400V: already preliminary tested by Atul, but more statistics is needed.

[Bi-daily calibrations]

Data **with 55Fe** - “fast” scans in z:

- Drift field
- GEMs transfer field
- Un-even GEMs voltage (e.g. 450 V - 440 V - 430V, etc. etc.)

Test the **radon filter** performance:

- 2 days at regular gain without the filter
- 7 days at regular gain with the filter

[assuming installation next Thursday]

RUN 4 - The plan

17/03/2024	Standard [440-440-440]
18/03/2024	Standard [440-440-440]
19/03/2024	Standard [440-440-440]
20/03/2024	Standard [440-440-440]
21/03/2024	Long Scan 1
22/03/2024	Long Scan 1
23/03/2024	Long Scan 2
24/03/2024	Long Scan 2
25/03/2024	Long Scan 3
26/03/2024	Nitrogen High Flow [440-440-440]
27/03/2024	Nitrogen High Flow [440-440-440]
28/03/2024	Nitrogen High+ Flow [440-440-440]
29/03/2024	Nitrogen High+ Flow [440-440-440]

Long “low gain” campaigns:

- Test up to three different configurations
- Based on the results of the “fast” scans

Nitrogen flow tests:

- 2 days with higher nitrogen flow
- 2 days with even higher nitrogen flow

- With this plan, the water shielding could be uninstalled by April 15th, which means RUN5 will last at most 7.5 months