



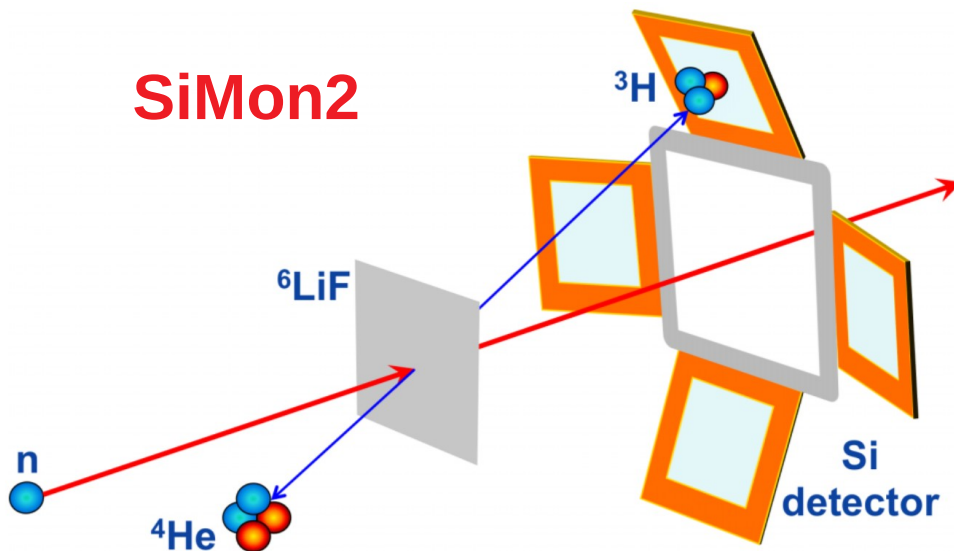
Status of SiMon-s



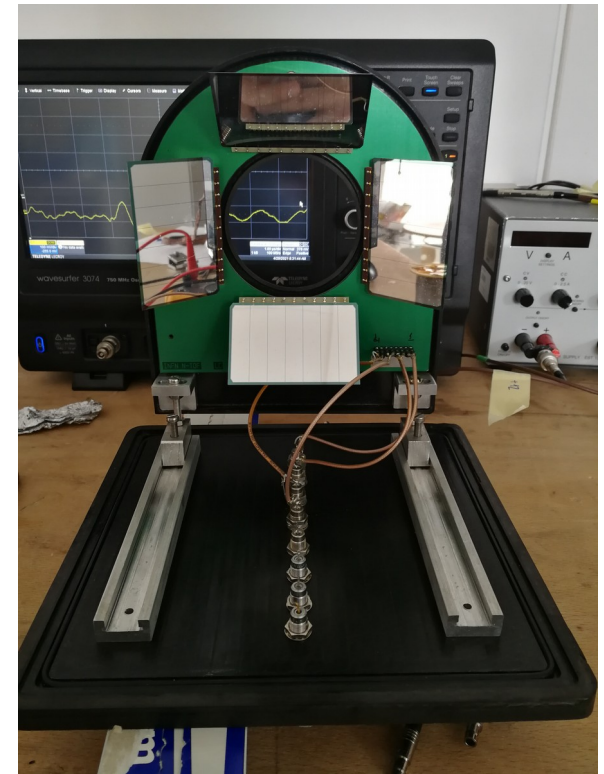
SiMon-s monitors

SiMon1 and SiMon2 are **two neutron beam monitors** (one for each EAR) that will be used for the flux evaluation and are usually employed during the neutron capture measurement to verify the beam stability.

Each detector is made of a LiF sample + 4 silicons detectors outside the neutron beam (slightly different geometry).



SiMon



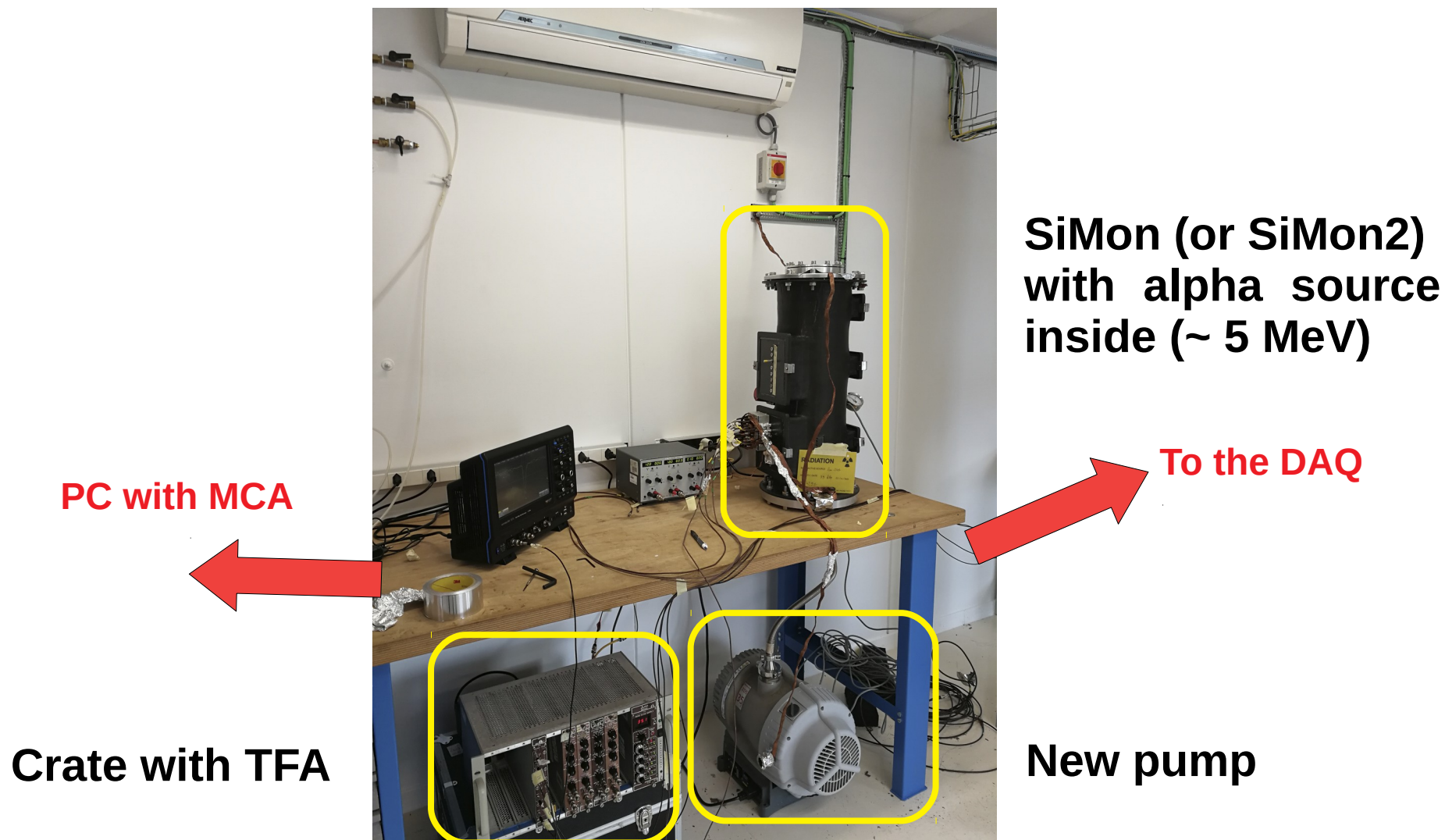
Activities on SiMon-s - goals

- 1) **Check the status of SiMon1 & SiMon2** and get ready for the commissioning
 - a) Manage the **transition** Massimo to Simone
 - b) **Check status** of the detectors, preamplifier & time filter amplifier
 - c) **Re-test the vacuum** for the chambers

- 2) Produce **new LiF samples**

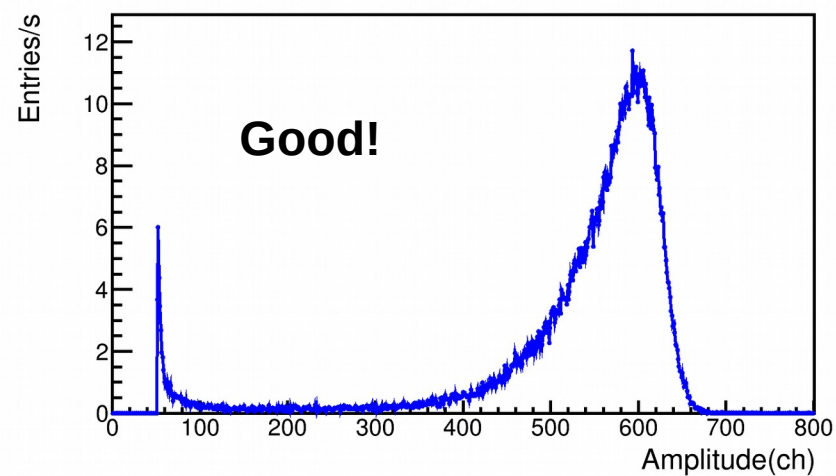
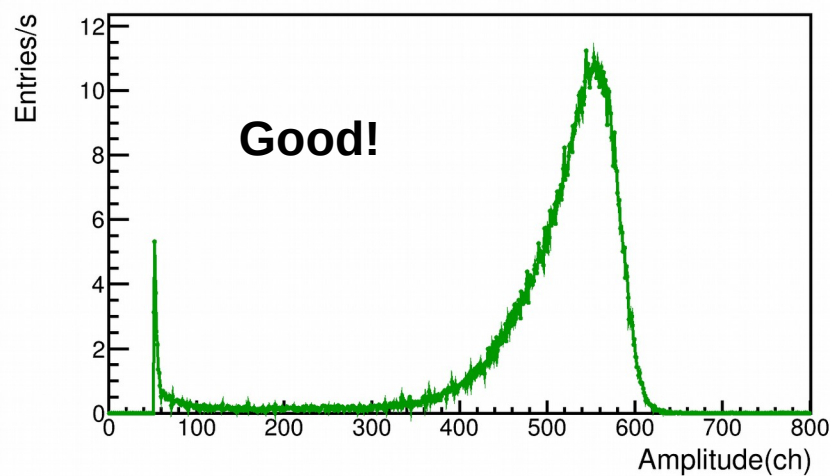
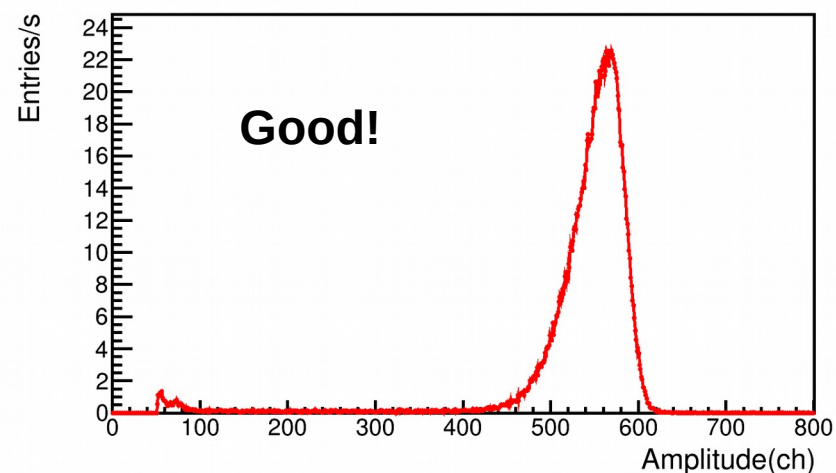
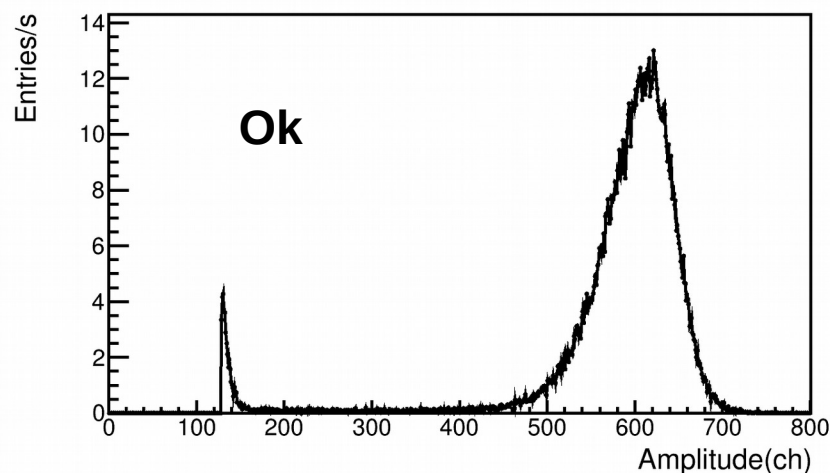
- 3) Get the **SiMon1 new chamber** operative

Test at n_TOF LAB - Setup



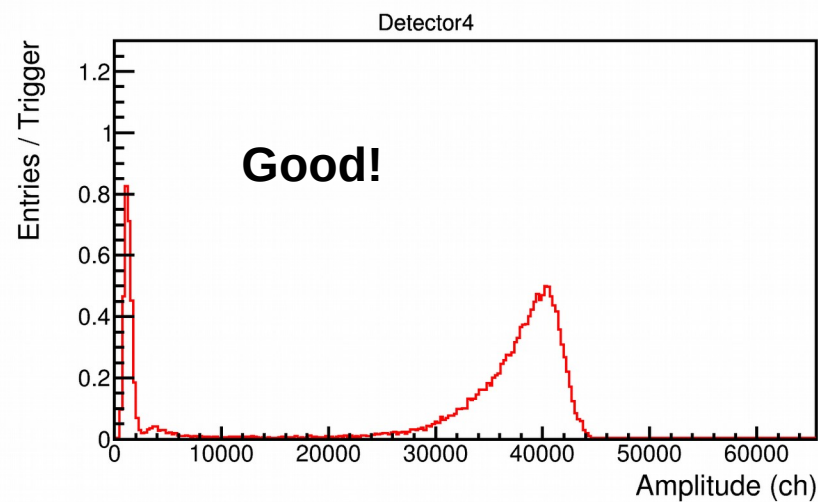
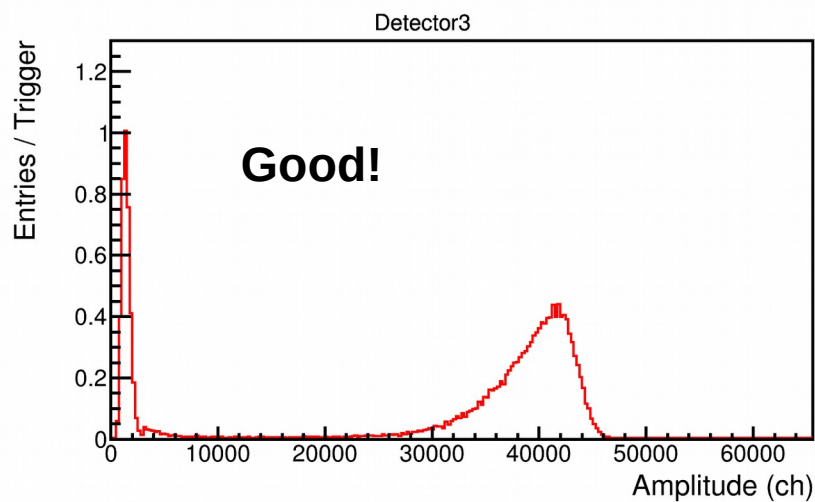
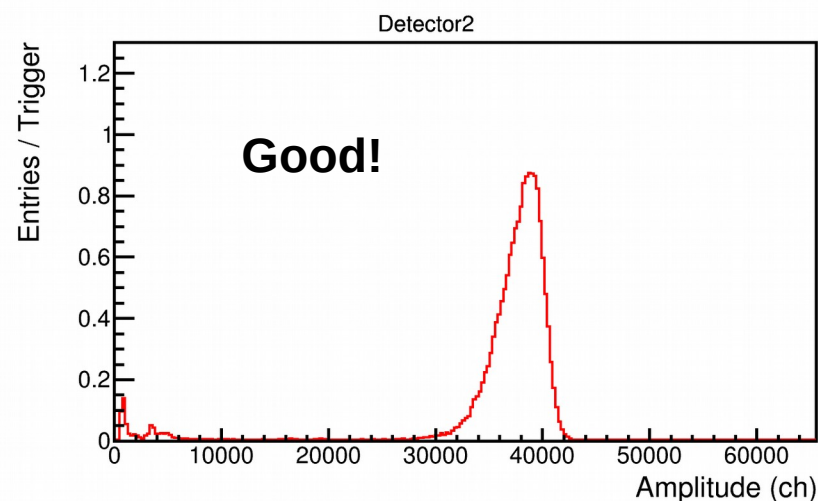
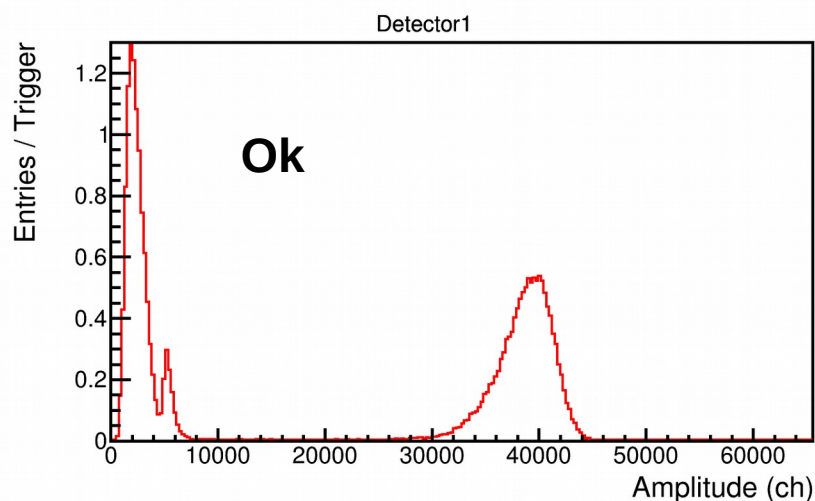
Test at n_TOF LAB - SiMon

Spectra acquired with MCA, all detectors are ready to work!



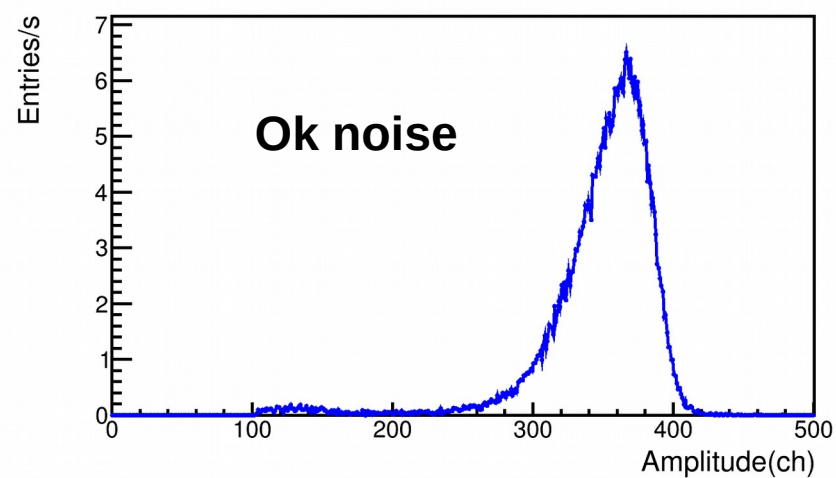
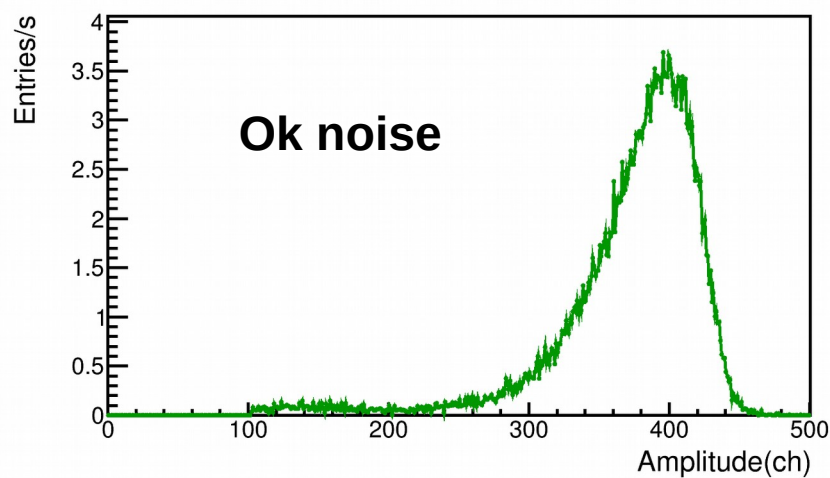
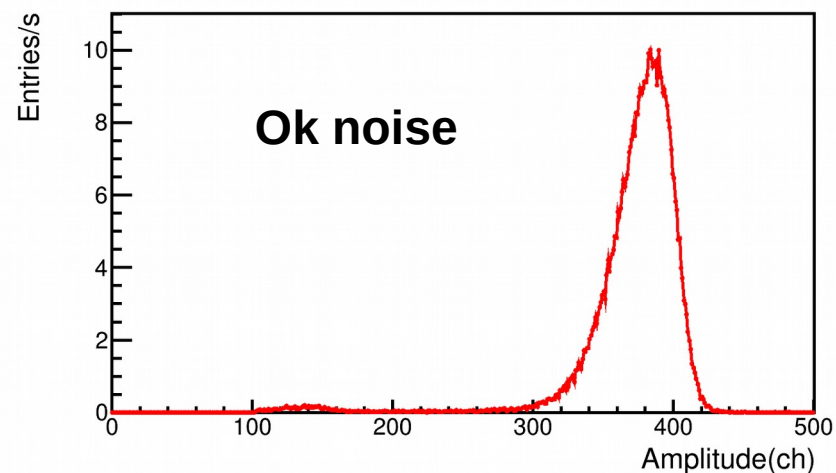
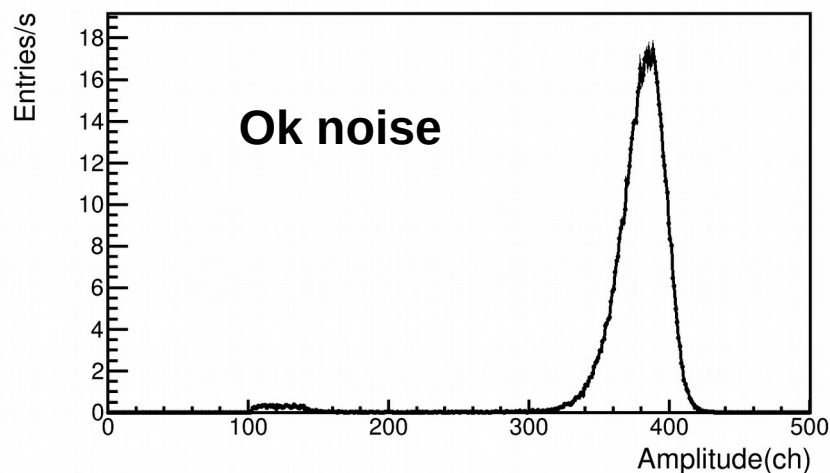
Test at n_TOF LAB - SiMon

Spectra acquired with DAQ, WARNING: very preliminary PSA parameters!



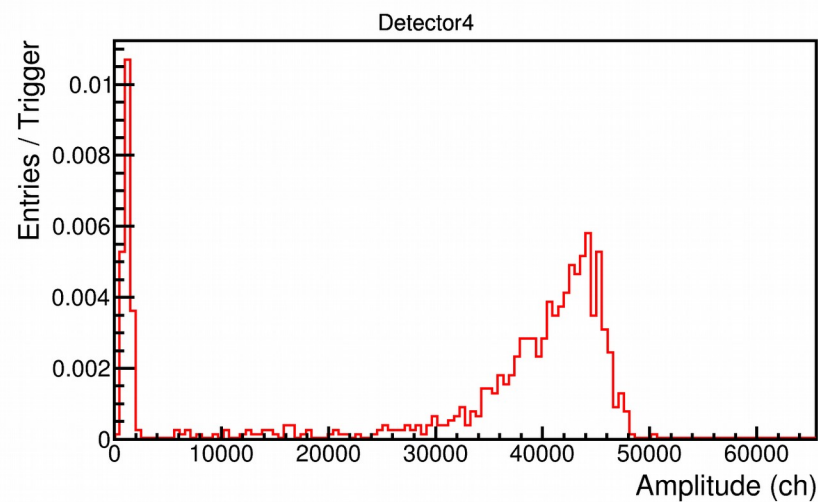
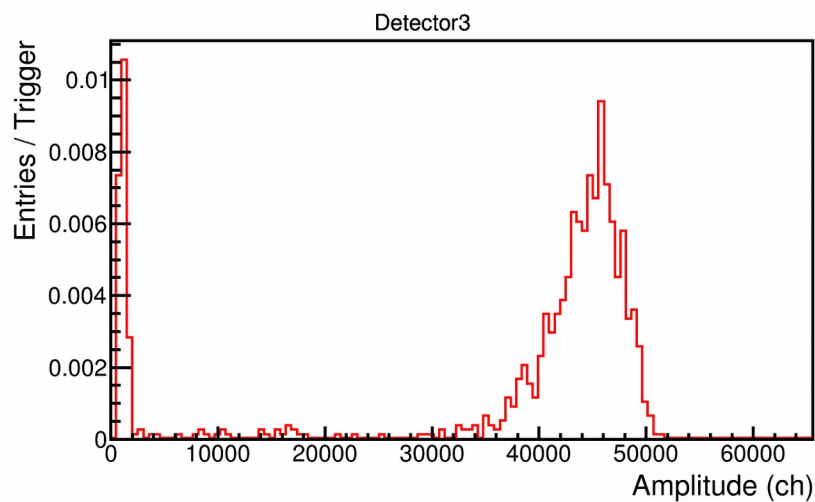
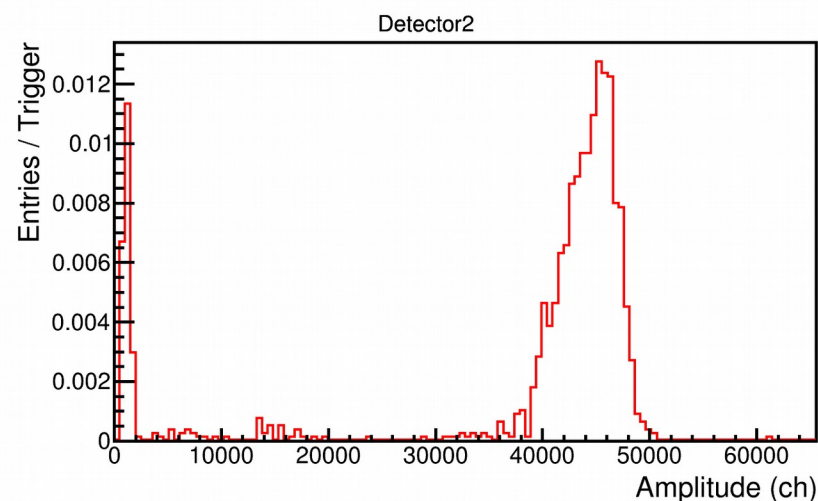
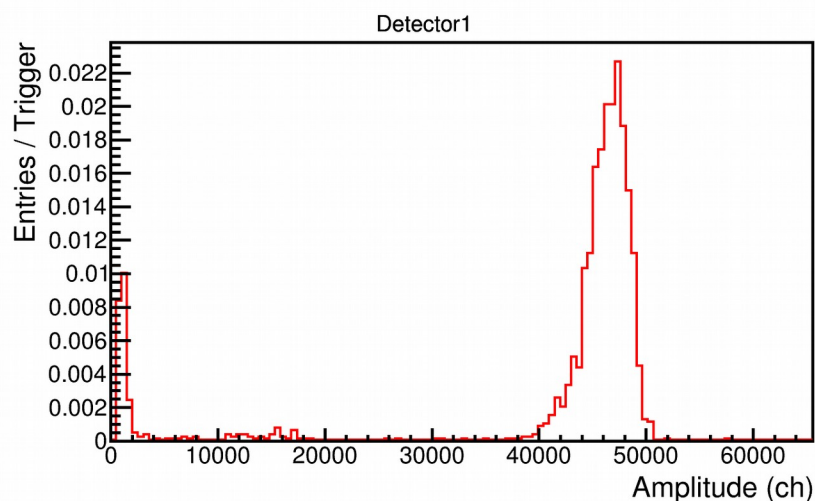
Test at n_TOF LAB - SiMon2

Spectra acquired with MCA, all are ok but in some the resolution seems to be better.



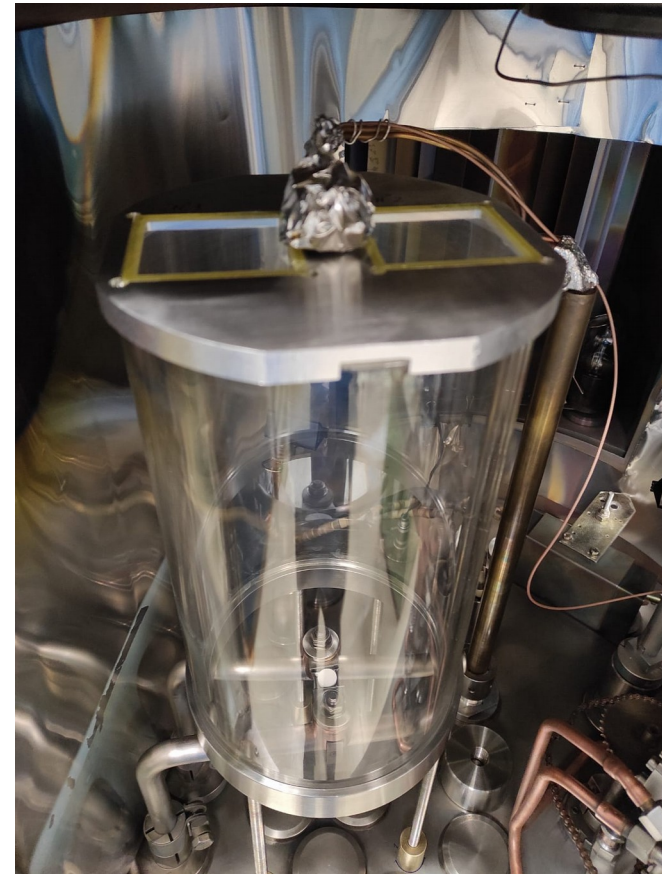
Test at n_TOF LAB - SiMon2

Spectra acquired with DAQ, WARNING: very preliminary PSA parameters!



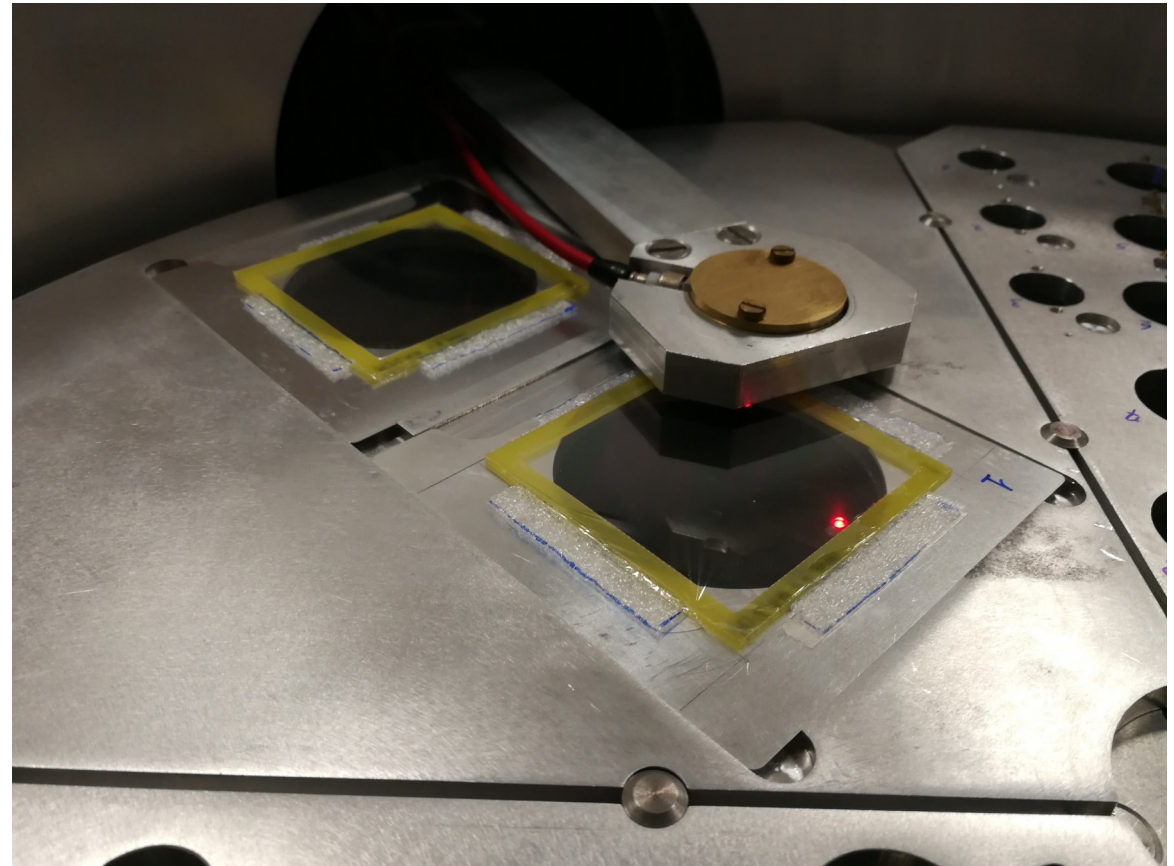
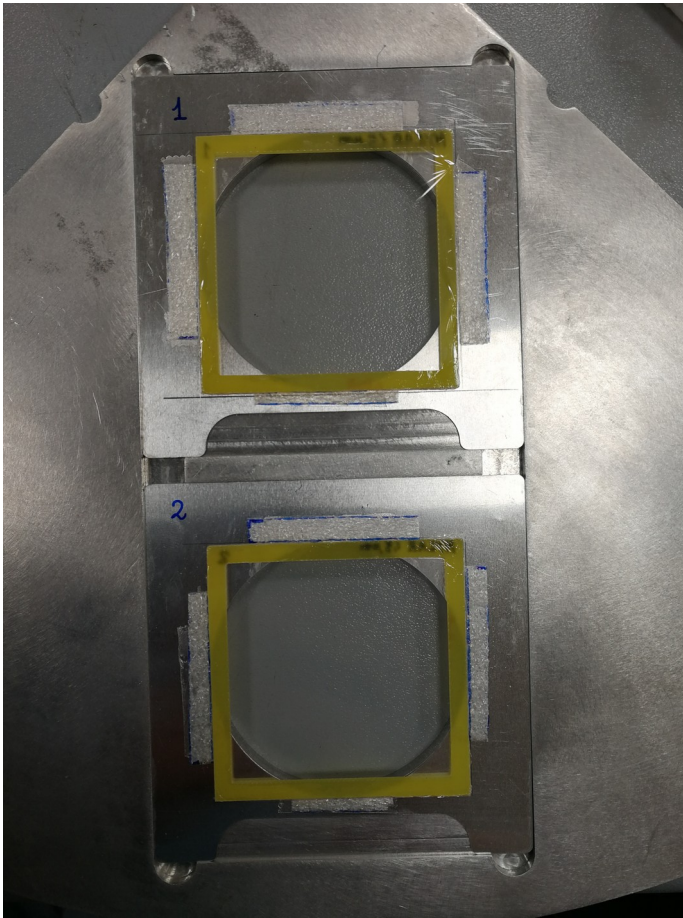
LiF deposition at LNS

Lithium fluoride has been deposited by **evaporation** (around $70\mu\text{g}/\text{cm}^2$ and $600\mu\text{g}/\text{cm}^2$). The precise thickness value will be measured afterwards.

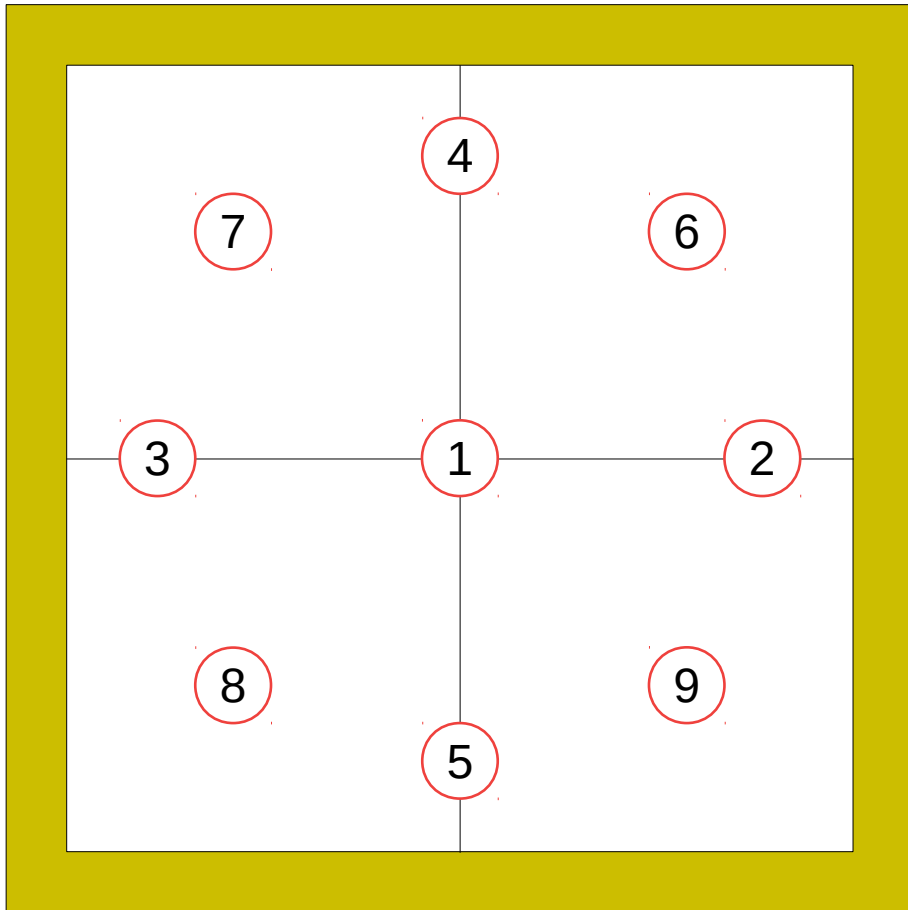


Mylar thickness - SiMon2

Mylar and Mylar+LiF thickness and homogeneity has been measured with a three-peak alpha source.



LiF thickness (Target2) - SiMon2



Point	X (mm)	Y (mm)	dE (keV)	Thickness LiF($\mu\text{g}/\text{cm}^2$)
1	0	0	230.9	83.09
2	20	0	239.28	85.74
3	-20	0	229.83	82.58
4	0	20	228.47	81.01
5	0	-20	229.44	71.45
6	15	15	232.68	85.53
7	-15	15	230.14	87.34
8	-15	-15	228.7	78.80
9	15	-15	230.32	78.80
Average thickness ($\mu\text{g}/\text{cm}^2$)			78.80	
Standard deviation ($\mu\text{g}/\text{cm}^2$)			4.84	

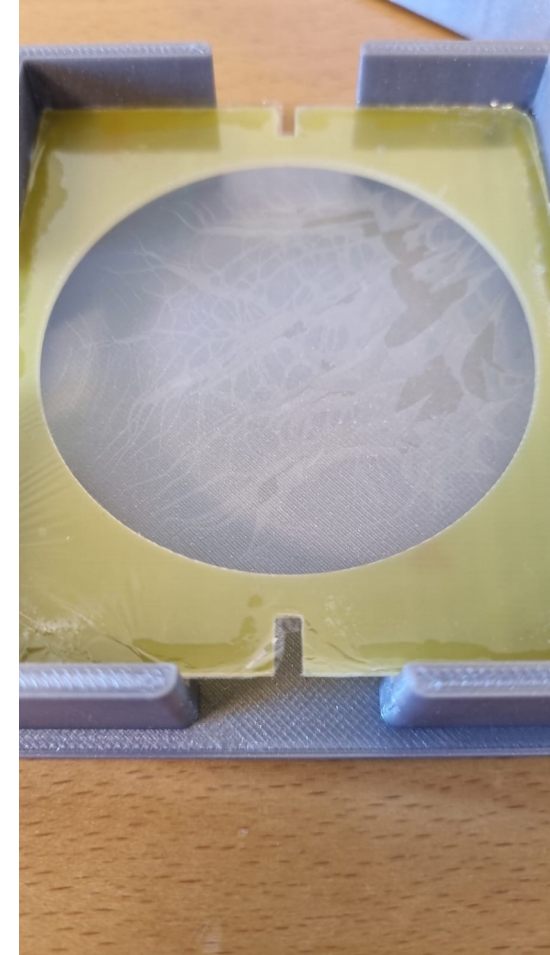
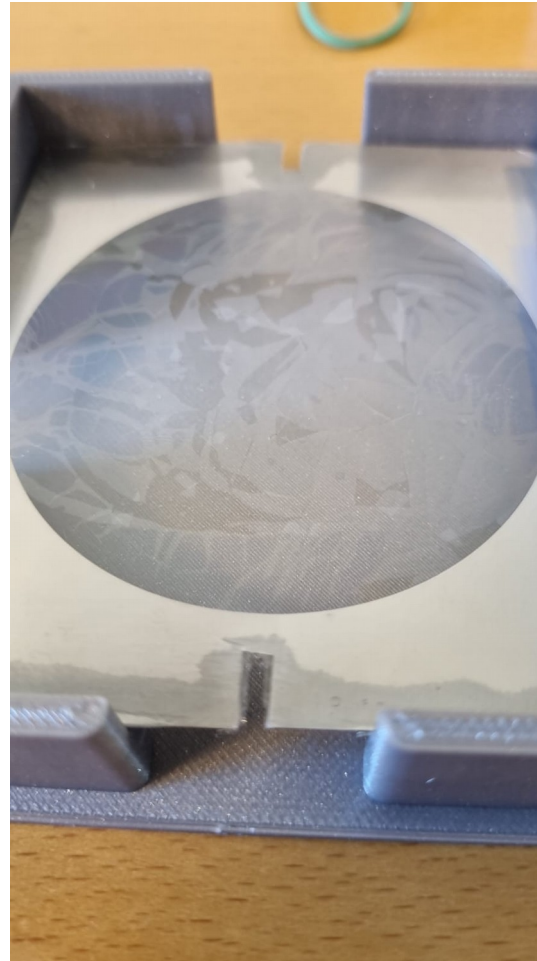
Homogeneity of 6%!

LiF target production at LNS

The new targets for SiMon started losing material after a couple of weeks, due to the high tenseness of the mylar and thickness of the deposition.

New targets have been made with a less tense mylar, in time for the commissioning.

We did not map the thickness and homogeneity due to the loose backing.

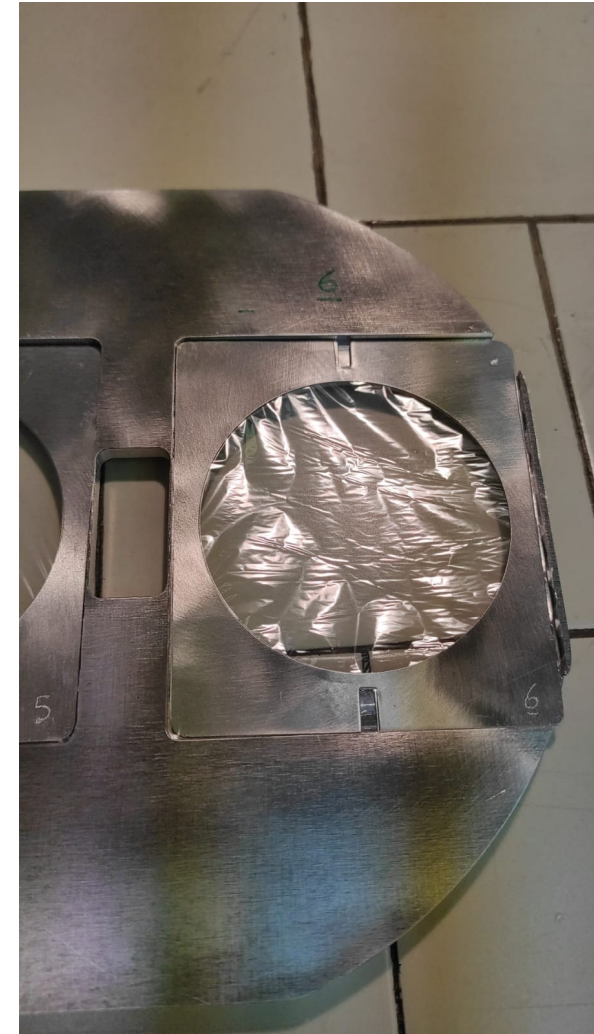


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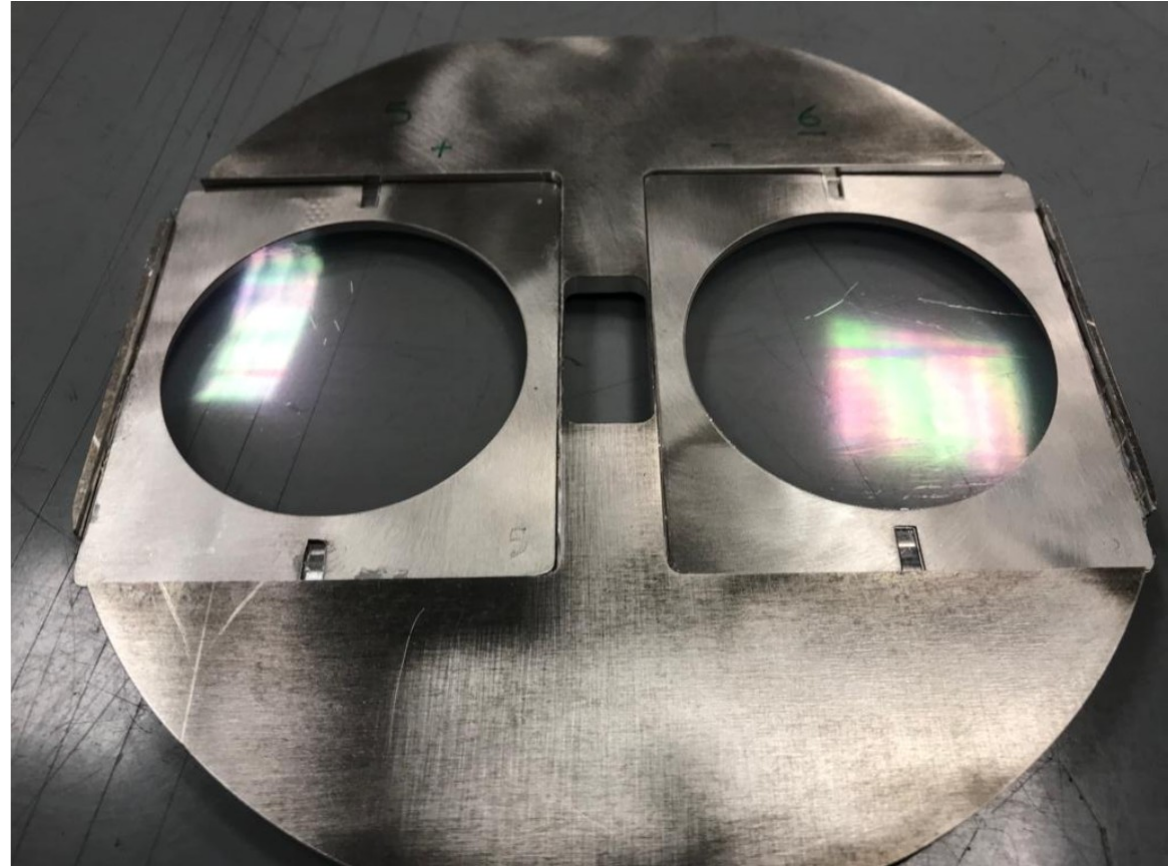


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Final considerations

- 1) **SiMon and SiMon2** has been tested and are ready to work for the 2021 commissioning
- 2) **New LiF samples have been deposited** and their thickness and homogeneity has been measured at LNS for the ones of SiMon2.
- 3) **We are working to make the new SiMon chamber operative.** A dialogue is ongoing with Oliver and Oscar for the mechanics and the spare preamplifier is being tested (ok up to now).

SiMon new chamber - plans

For the commissioning the old chamber of SiMon will be used for different reasons (we want to measure the flux with a well known setup + it is a unnecessary risk to dismount the detectors from the chamber).

For the future (2022?) I want to **switch to the new one**, since we have spare of each element (preamp and board) but **only 3 silicons** (2 of them have damaged bonding but they can be repaired), we have two options:

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- 1) Buy 1 (or better 2) **new silicons from Micron (1.5 k€ each)** to assemble an independent board (with a spare) and assemble the new chamber **without touching the old one** (that will remain operative).

SiMon new chamber - plans

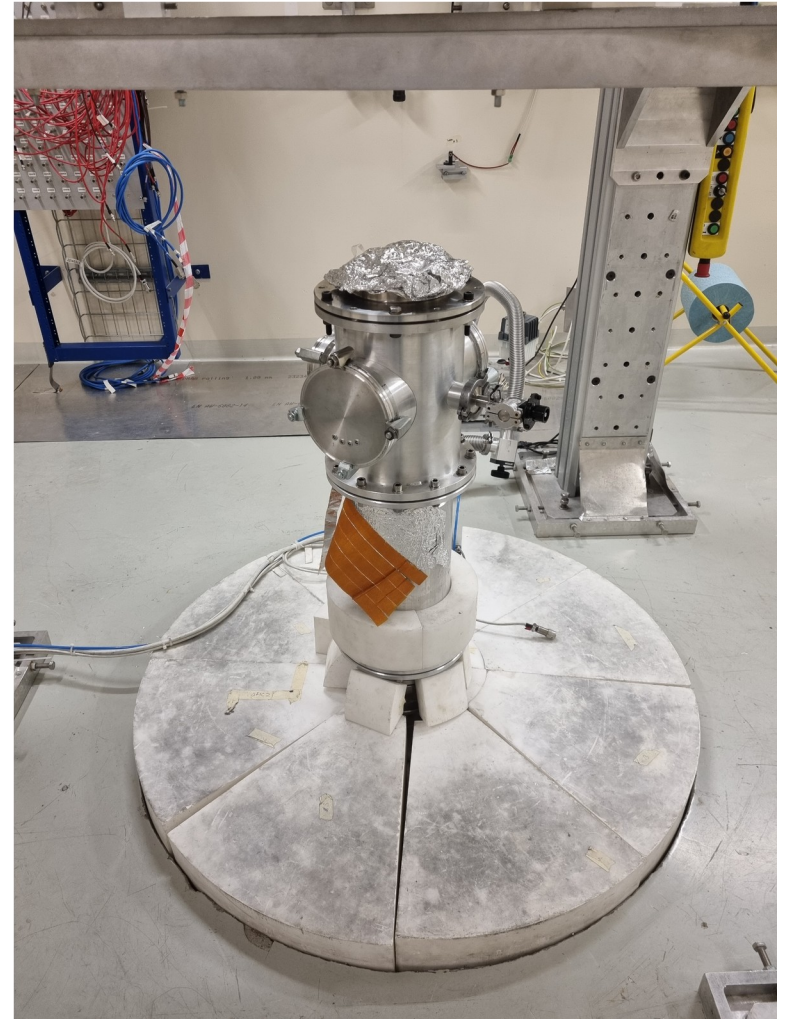
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- 1) Buy 1 (or better 2) **new silicons from Micron (1.5 k€ each)** to assemble an independent board (with a spare) and assemble the new chamber **without touching the old one** (that will remain operative).
- 2) **Move the board with the 4 silicons from the old chamber to the new one (0 €)**. That means we lose the alignment but in principle this operation can be reversed in case it is needed.

Commissioning!

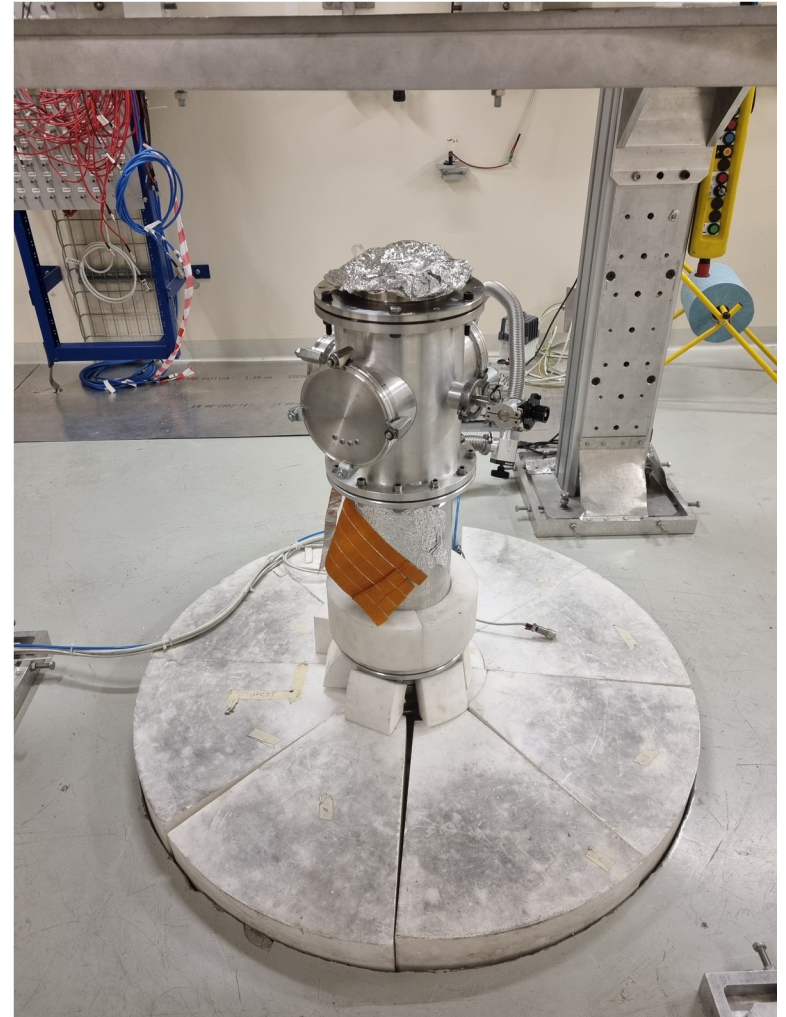
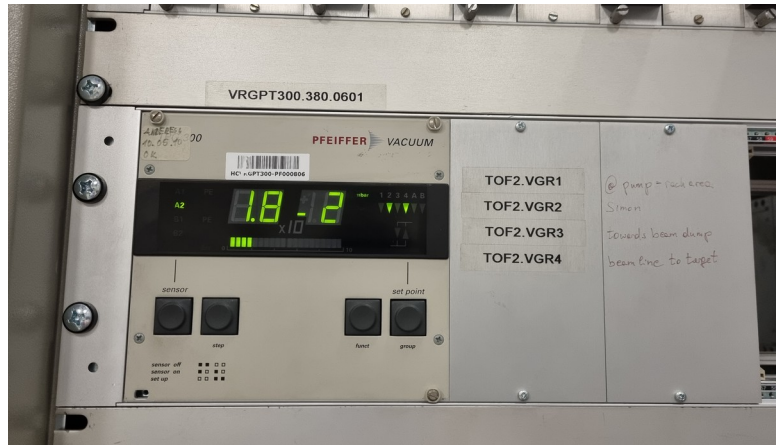
SiMon2 has been already installed!



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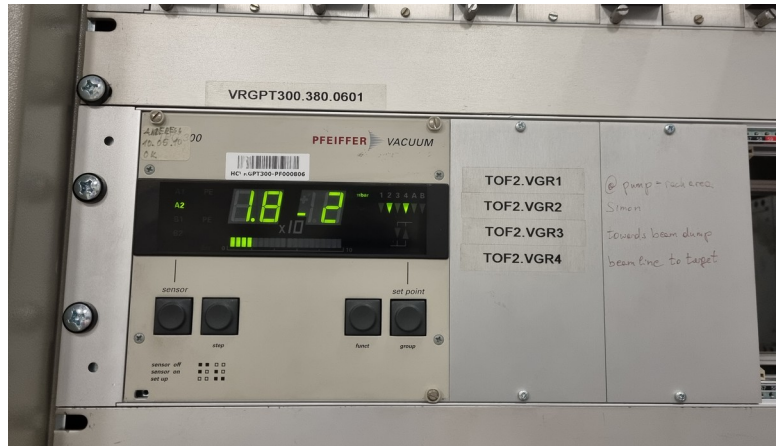
Vacuum has been connected and tested



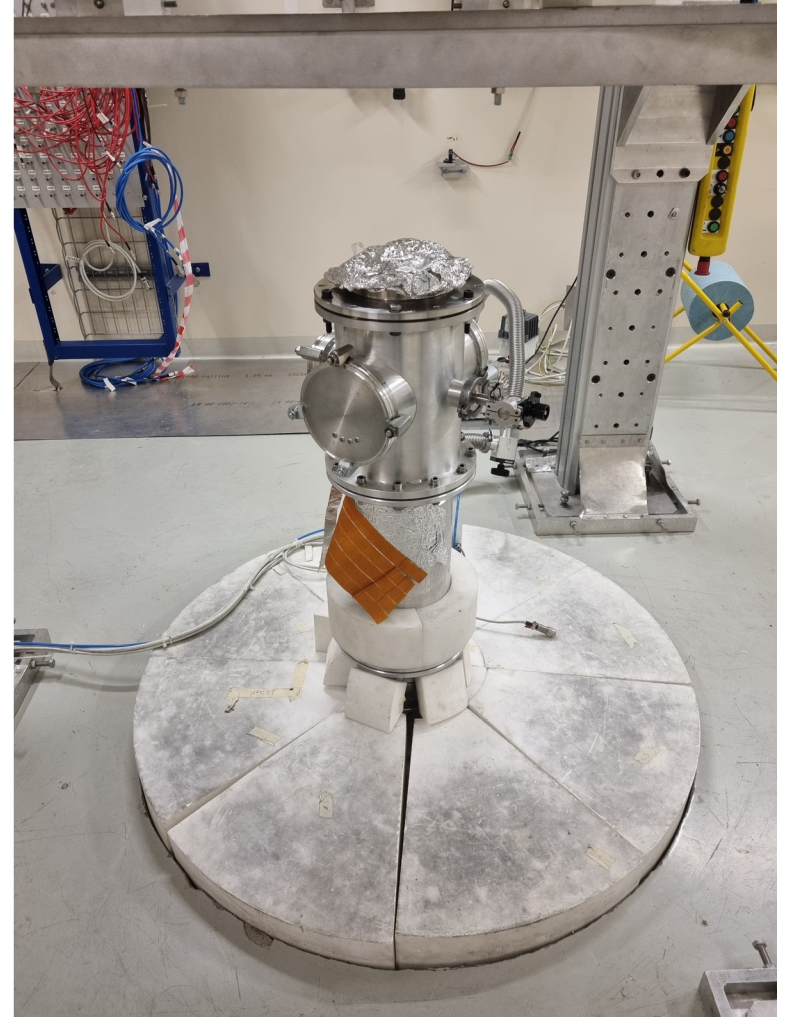
Commissioning!

SiMon2 has been already installed!

Vacuum has been connected and tested



To do: grounding and connect cables

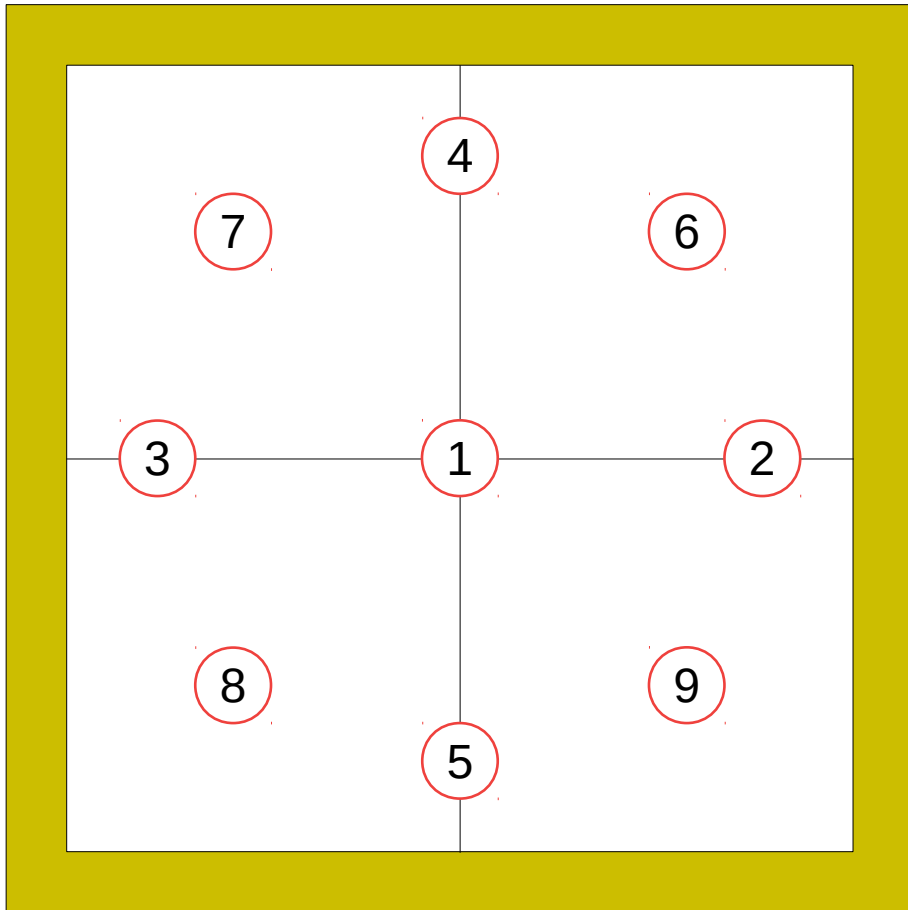


Plans for the commissioning

- 1) There is the possibility collect some data with the old samples to have a reference when the new ones will be mounted (do we want to do that? not really...).
- 2) Final configuration for EAR1: SiMon1 old chamber + new sample
- 3) Final configuration for EAR1: SiMon2 + new sample

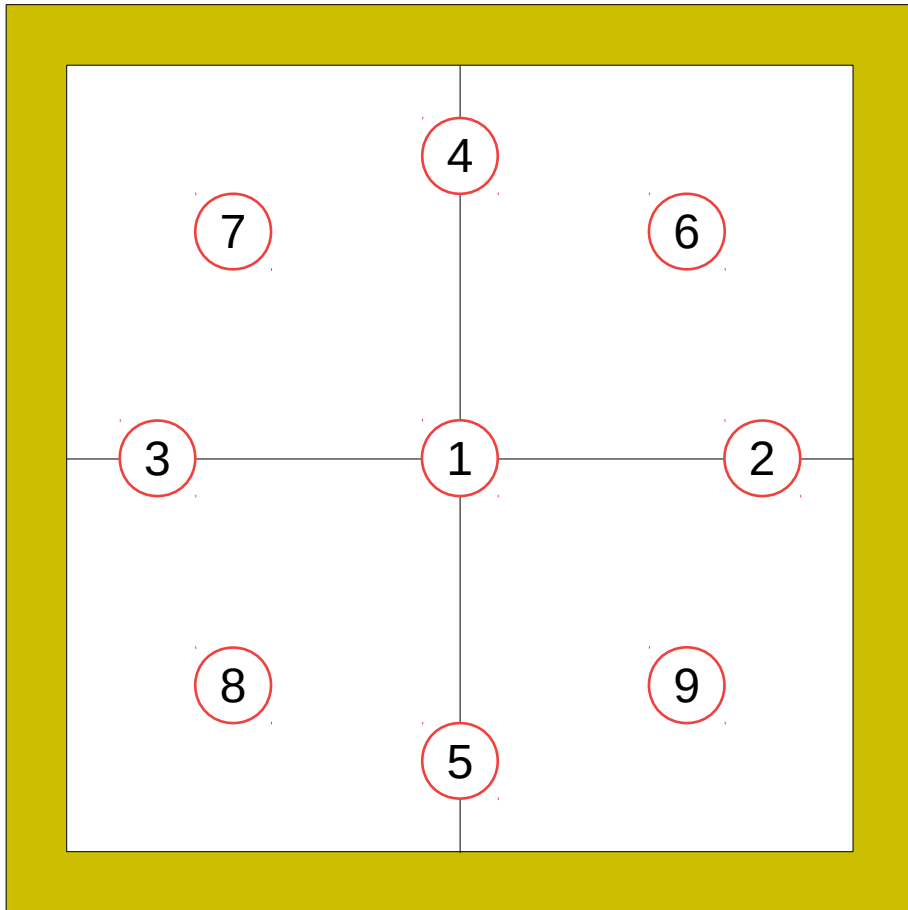
Backup

LiF thickness (Target1) - SiMon2



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1	0	0	232.06	78.12
2	20	0	229.07	70.33
3	-20	0	249.49	112.10
4	0	20	241.28	99.96
5	0	-20	242.35	77.96
6	15	15	232.97	72.39
7	-15	15	230.27	81.72
8	-15	-15	252.61	77.10
9	15	-15	236.54	74.25
Average thickness ($\mu\text{g}/\text{cm}^2$)			82.66	
Standard deviation ($\mu\text{g}/\text{cm}^2$)			14.00	

LiF thickness (Target2) - SiMon2



Point	X (mm)	Y (mm)	dE (keV)	Thickness LiF($\mu\text{g}/\text{cm}^2$)
1	0	0	230.9	83.09
2	20	0	239.28	85.74
3	-20	0	229.83	82.58
4	0	20	228.47	81.01
5	0	-20	229.44	71.45
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Homogeneity of 6%!