

# ProtoDUNE-VD PDS installation schedule and people available at CERN

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Version 8

# People at CERN

- CSU people will train others in December
- Manuel will be there all the time
- Need to clarify situation for cold box last week of November and first week of December
- Need to organize temas for January, a very busy month !!!!!

**I haven't look at the spreadsheet, sorry, so I'm sure there is people missing here**

	people	december	january
CSU	John	9-20	
	Jay	12-20	9-18 (?)
	Sam	9-20	
MiB	Carla	X-Y	
	Claudia	X-Y	
	Luca	X-Y	
	Electronic engineer	X-Y	
IFIC	Anselmo	9-22	9-13
	Julio	9-22	
Ciemat	Enrique		9-13
	Antonio		9-13
	Ivan		9-13

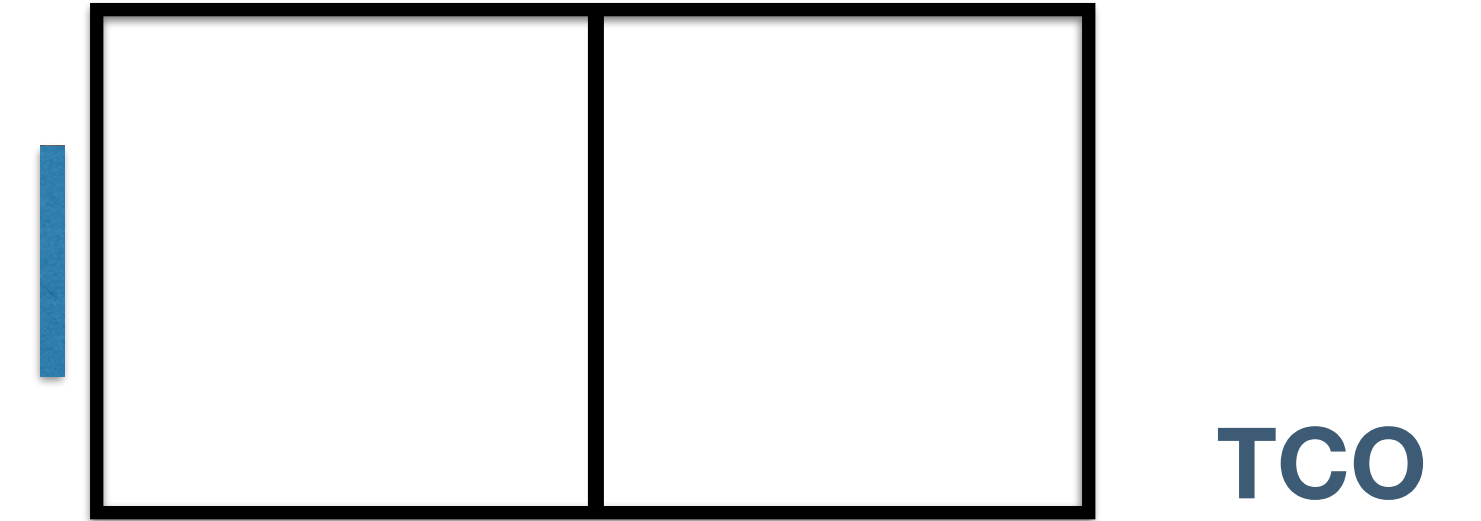
# New in this version

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- Assume for the moment tests at cold are done without filters
  - To be discuss within the testing WG
- Move top upstream membrane installation to first working week of January.  
No impact of the rest of the schedule

# Top upstream membrane

- 2 modules
- 36 97x202 ZAOT filters
- 320 HPK SiPMs



9 people (CSU, MiB, IFIC)

3 people (Ciemat)

Mon	Tue	Wed	Thu	Fri	Sat	Sun
12	13	14	15	16	17	18
module assembly (except filters)						
		module testing				
19	20	21	22	23	24	25
module testing						
module assembly (filters)						
26	27	28	29	30	31	1 Jan
2	3	4	5	6	7	8
9	10	11	12	13	14	15
module installation						
16	17	18	19	20	21	22

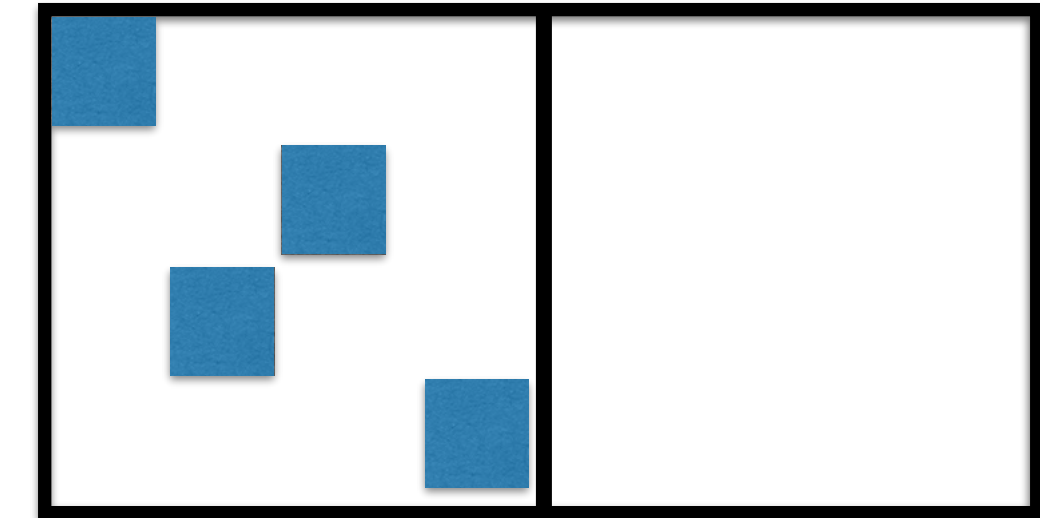
# Upstream cathode

- 4 modules
- 72 97x202 ZAOT filters
- 64 150x150 PE filters
- 480 HPK SiPMs
- 160 FBK SiPMs
- **Contingency:** sufficient time for all operations
- Class-4 laser test the week after

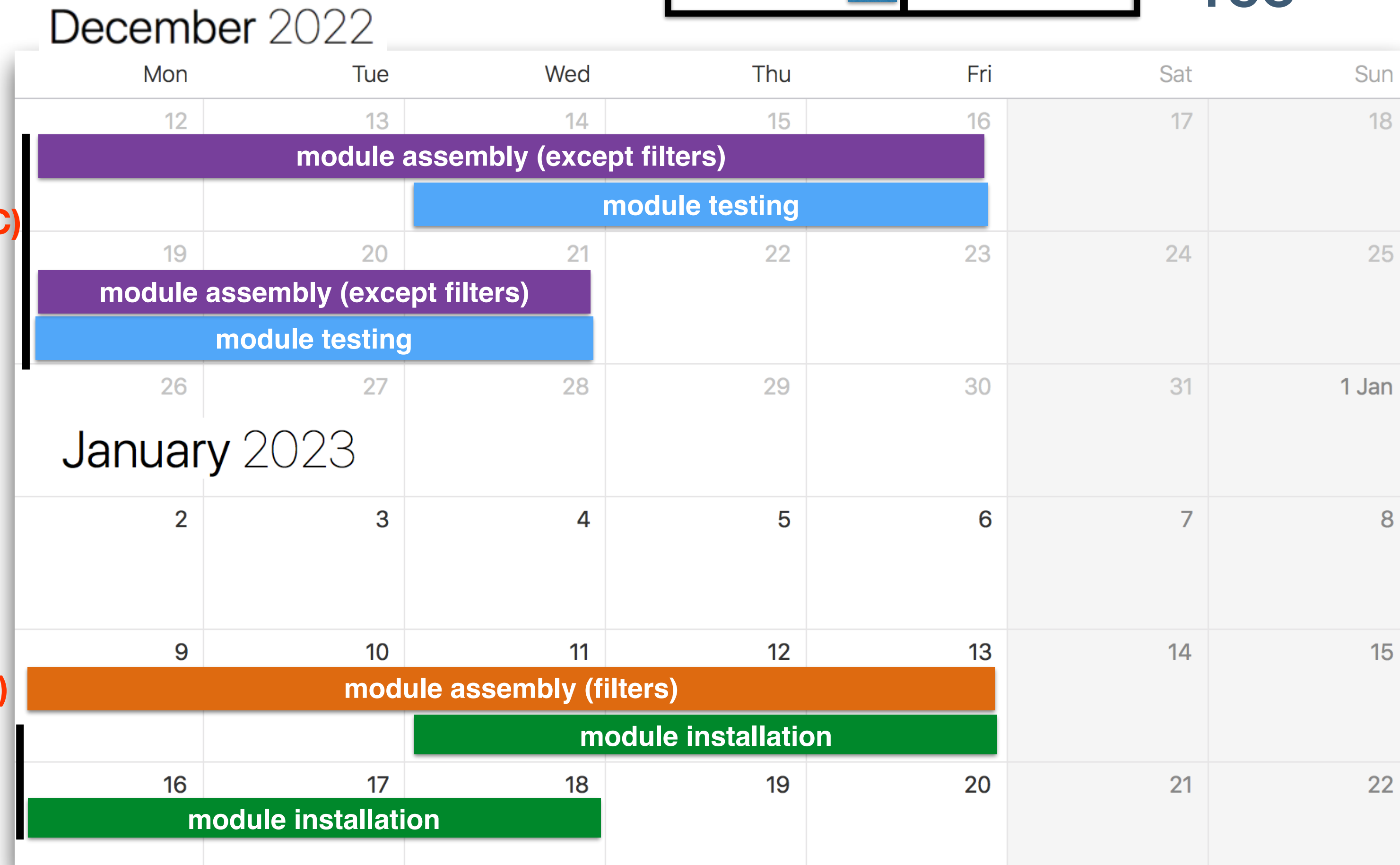
9 people (CSU, MiB, IFIC)

5 people (Ciemat, CSU, IFIC)

1 person (CSU)



TCO

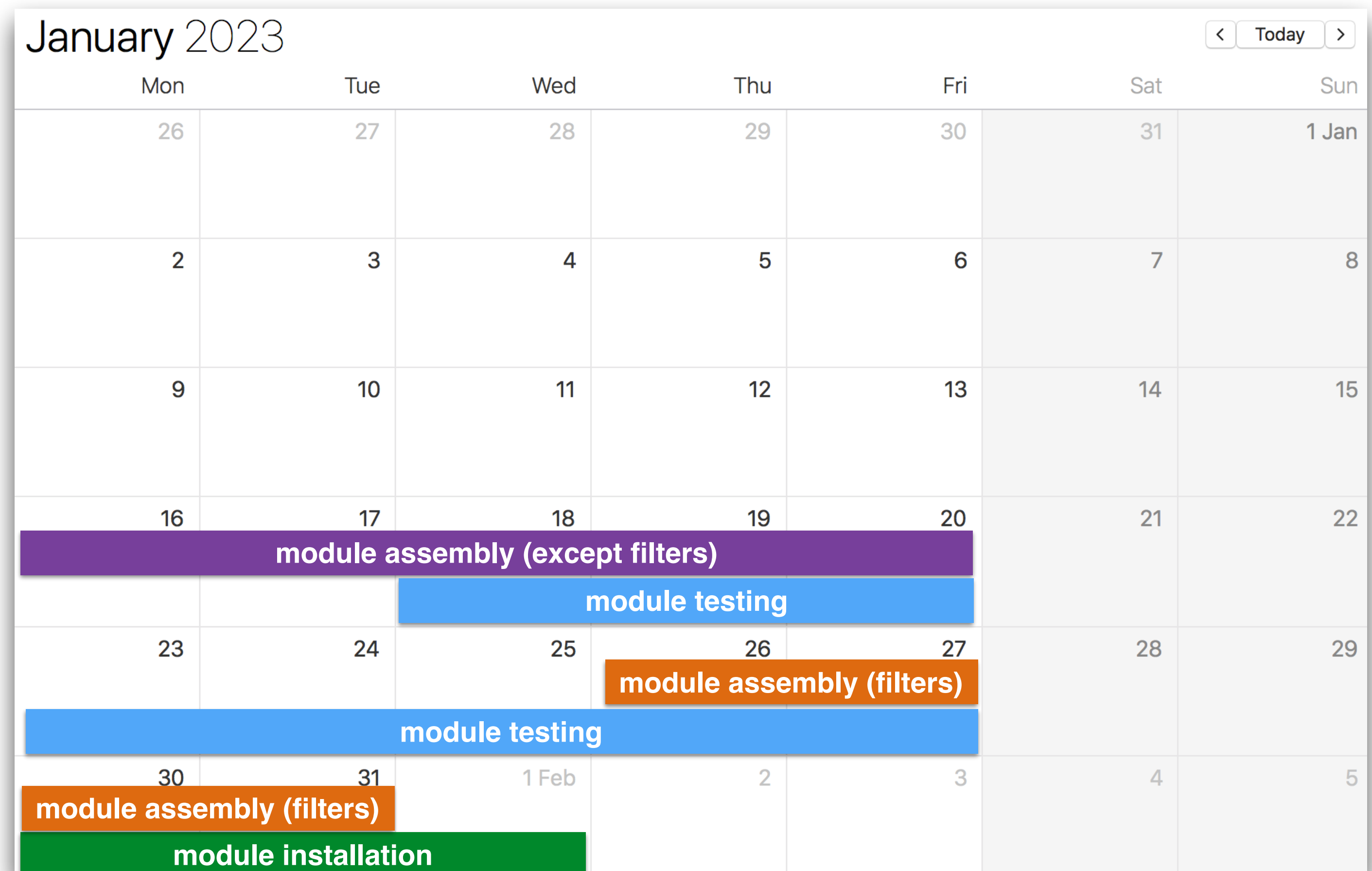


# Top downstream membrane

- 2 modules
- 32 150x150 ZAOT filters
- 32 150x150 PE filters
- 320 HPK SiPMs

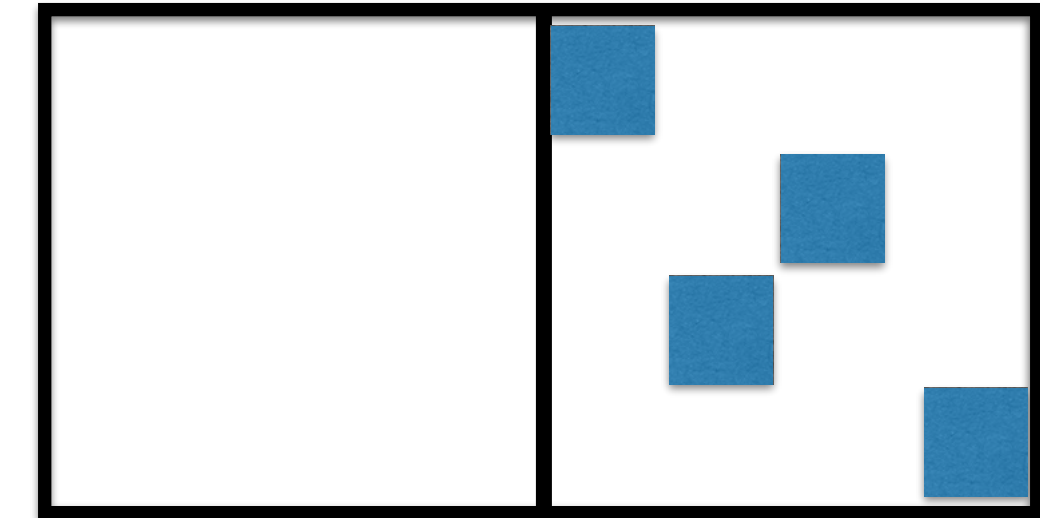


1 person (CSU)



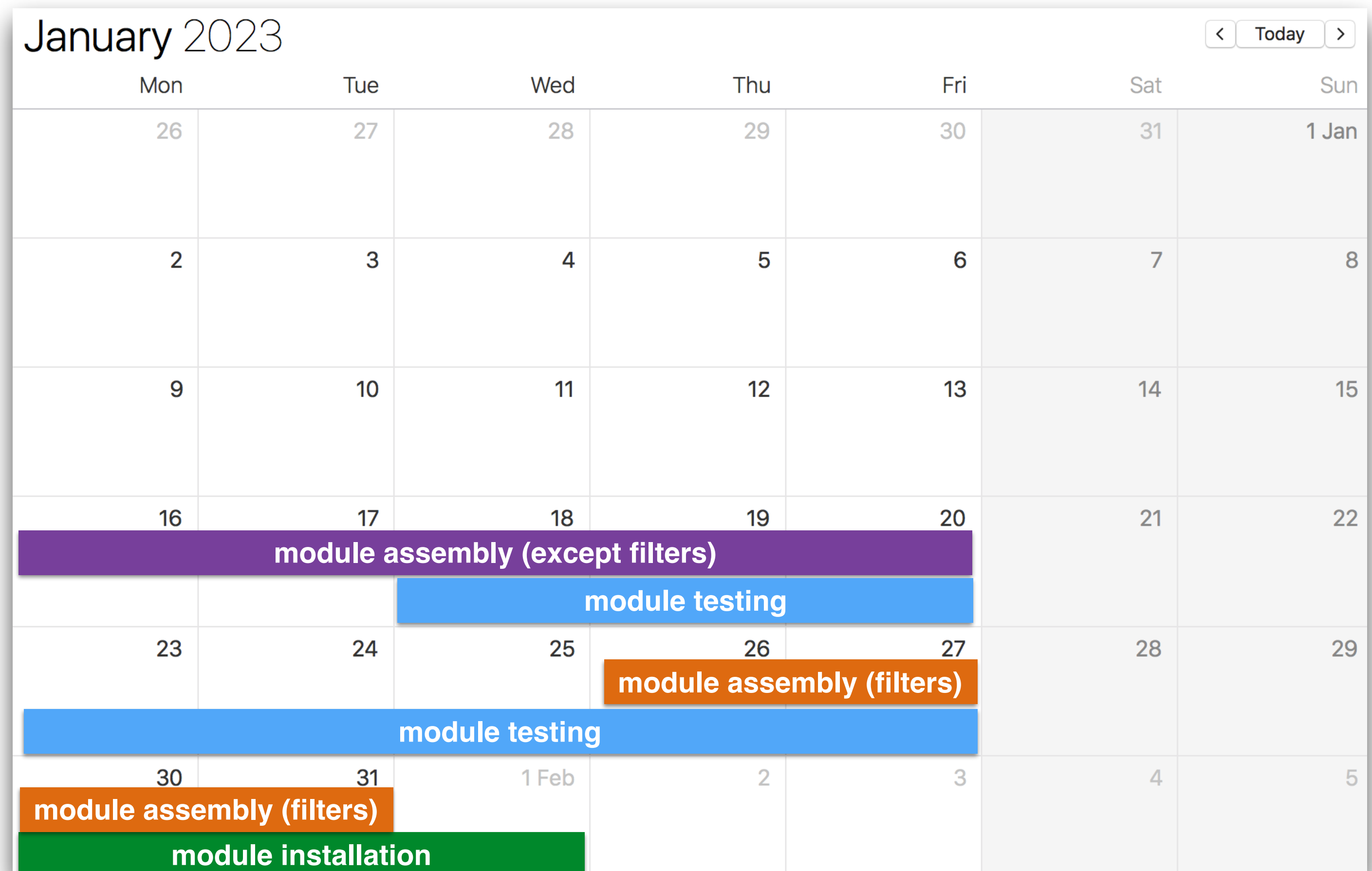
# Downstream cathode

- 4 modules
- 64 150x150 ZAOT filters
- 64 150x150 PE filters
- 640 HPK SiPMs



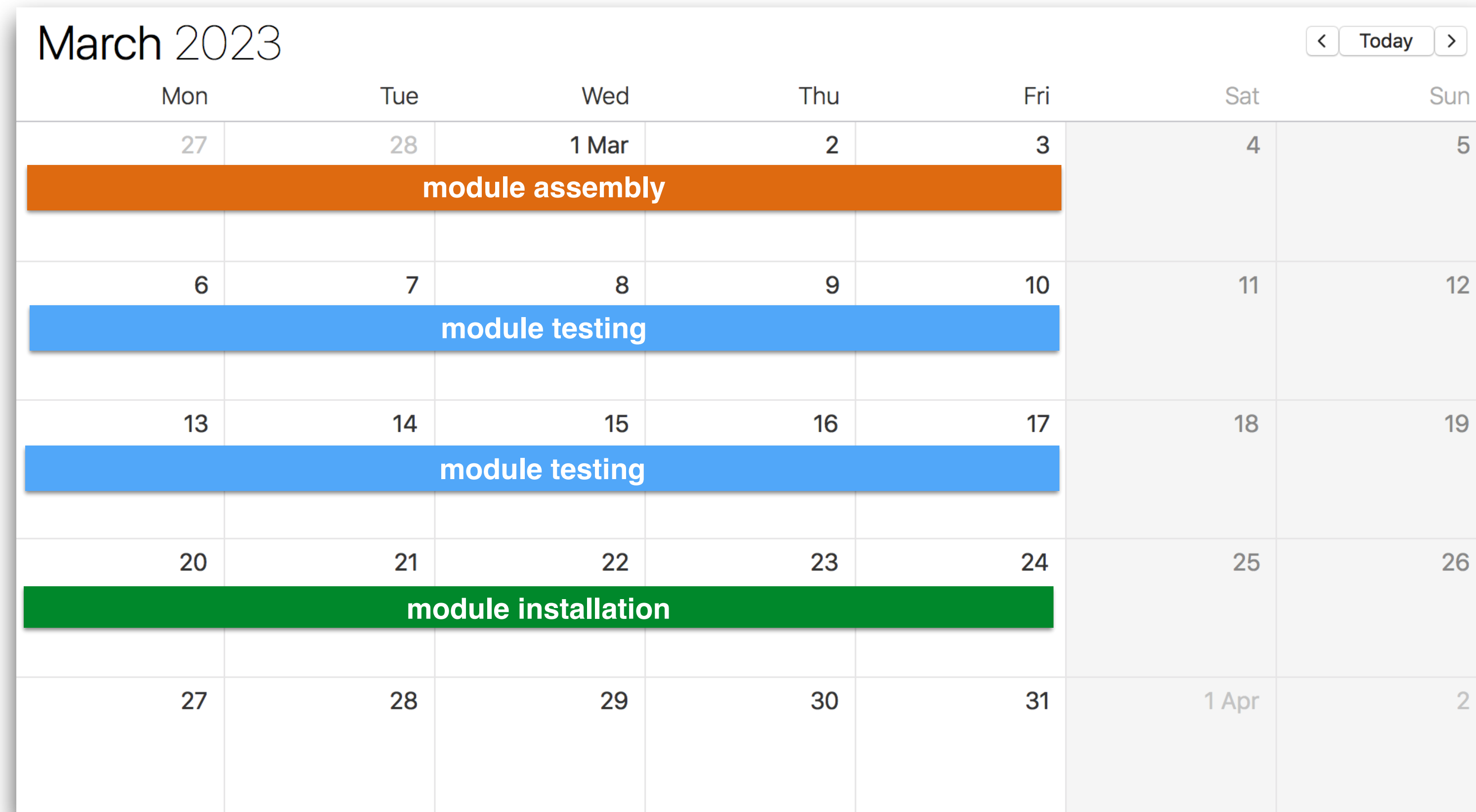
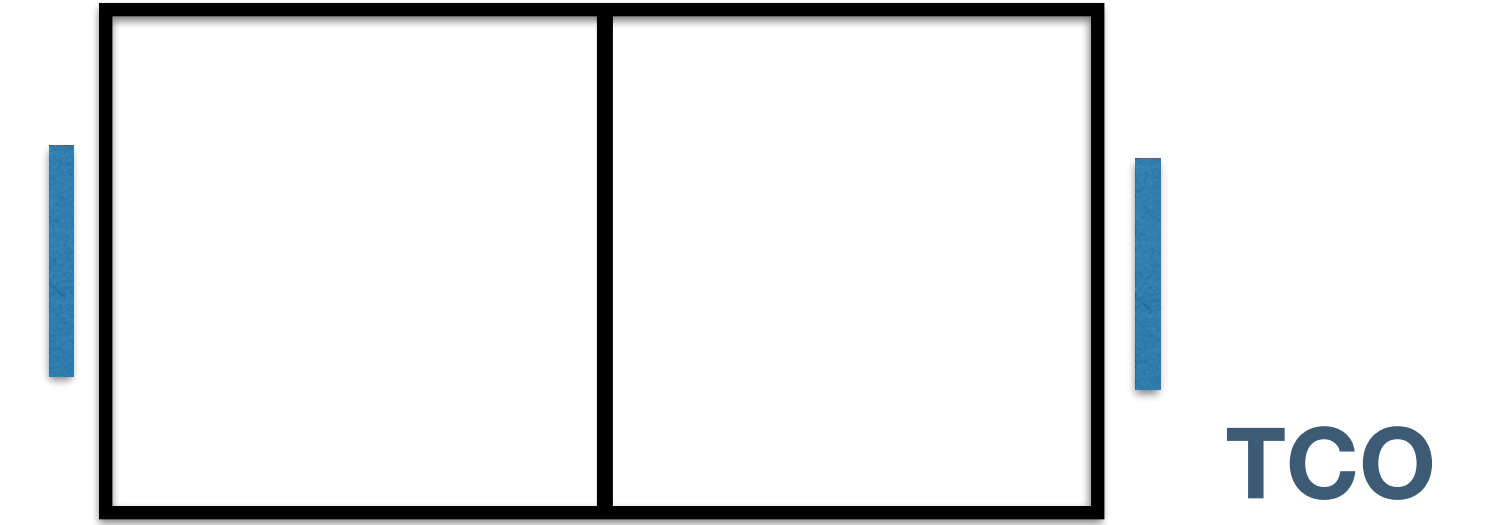
TCO

1 person (CSU)



# Bottom membrane, temporary

- 4 modules
- temporary 97x200 & 97x97 filters reused from cold boxes
- 320 HPK SiPMs
- 320 FBK SiPMs
- **Contingency:** sufficient time for all operations



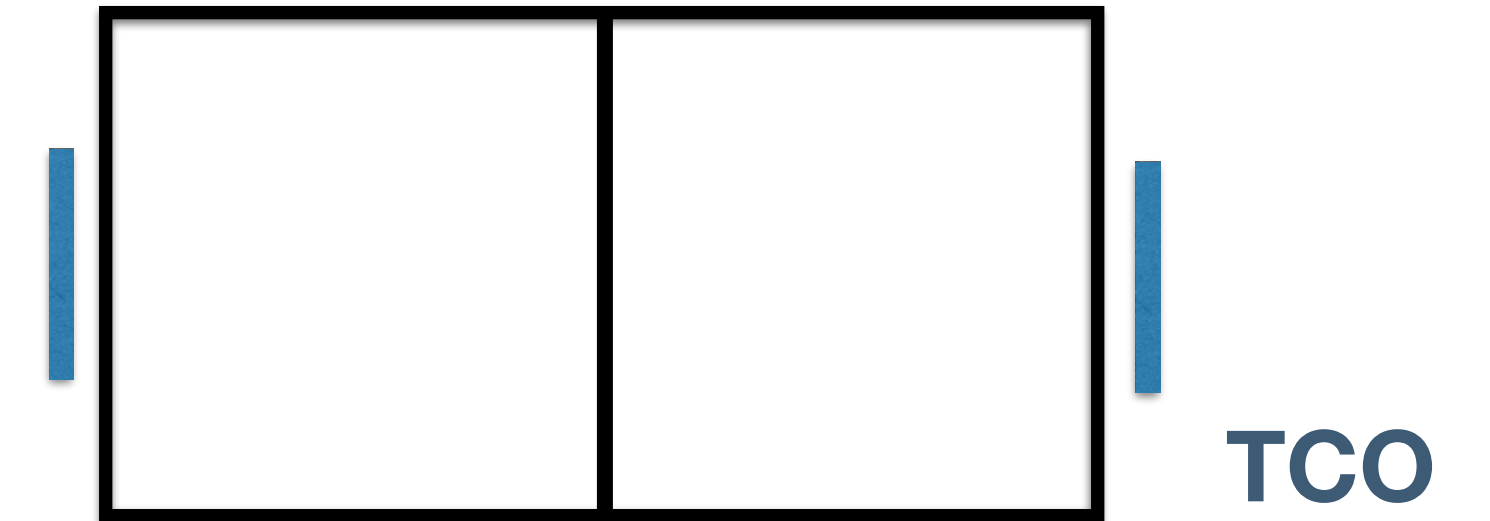


backup

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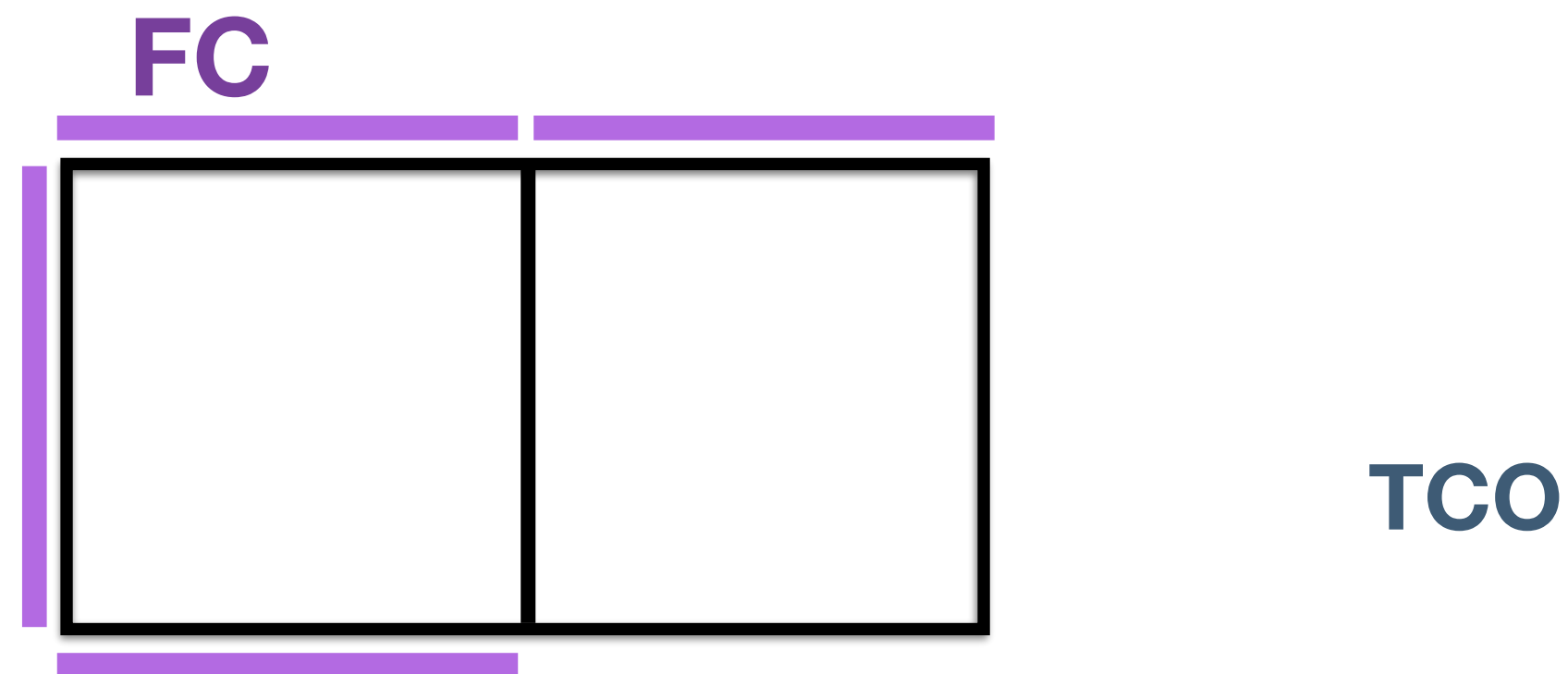
# Bottom membrane, final

- Replace modules
- State of the art components
  - Optimized filters (size and transmission)
  - Optimized frame (ribless ?, gapless ?)
  - Optimized electronics
- Time to install them until TCO closing, or even later since the module fits through man hole



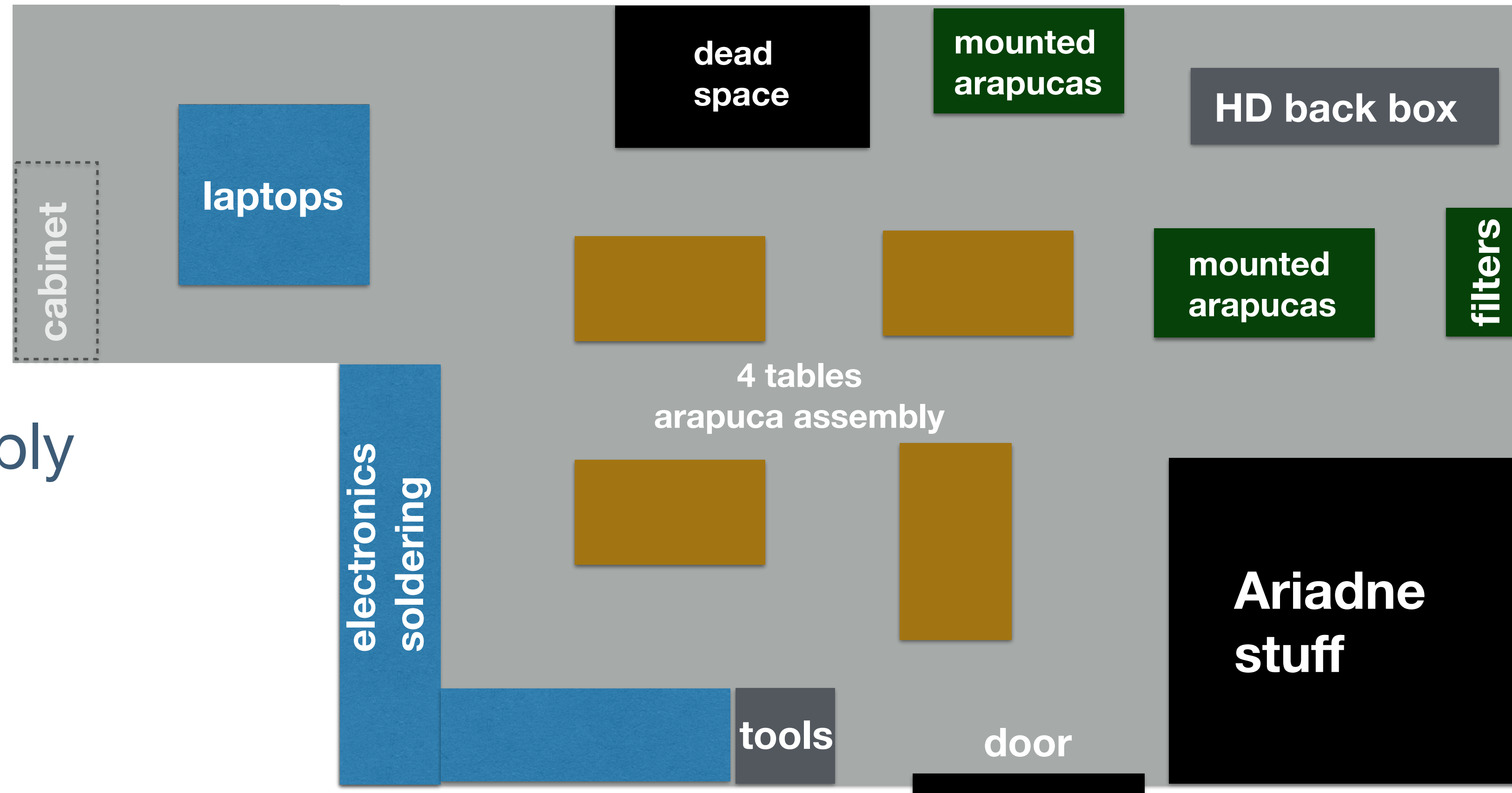
# Access to second cathode

- Last two FC walls installed the week of April 3rd to allow for downstream bottom CRP installation
- This will be installed the week of march 13th
- We have time until then to replace things in the downstream cathode, installed moth earlier
- We could event install FBK (arriving mid February) on that cathode if we find the way of doing it with cathode in place



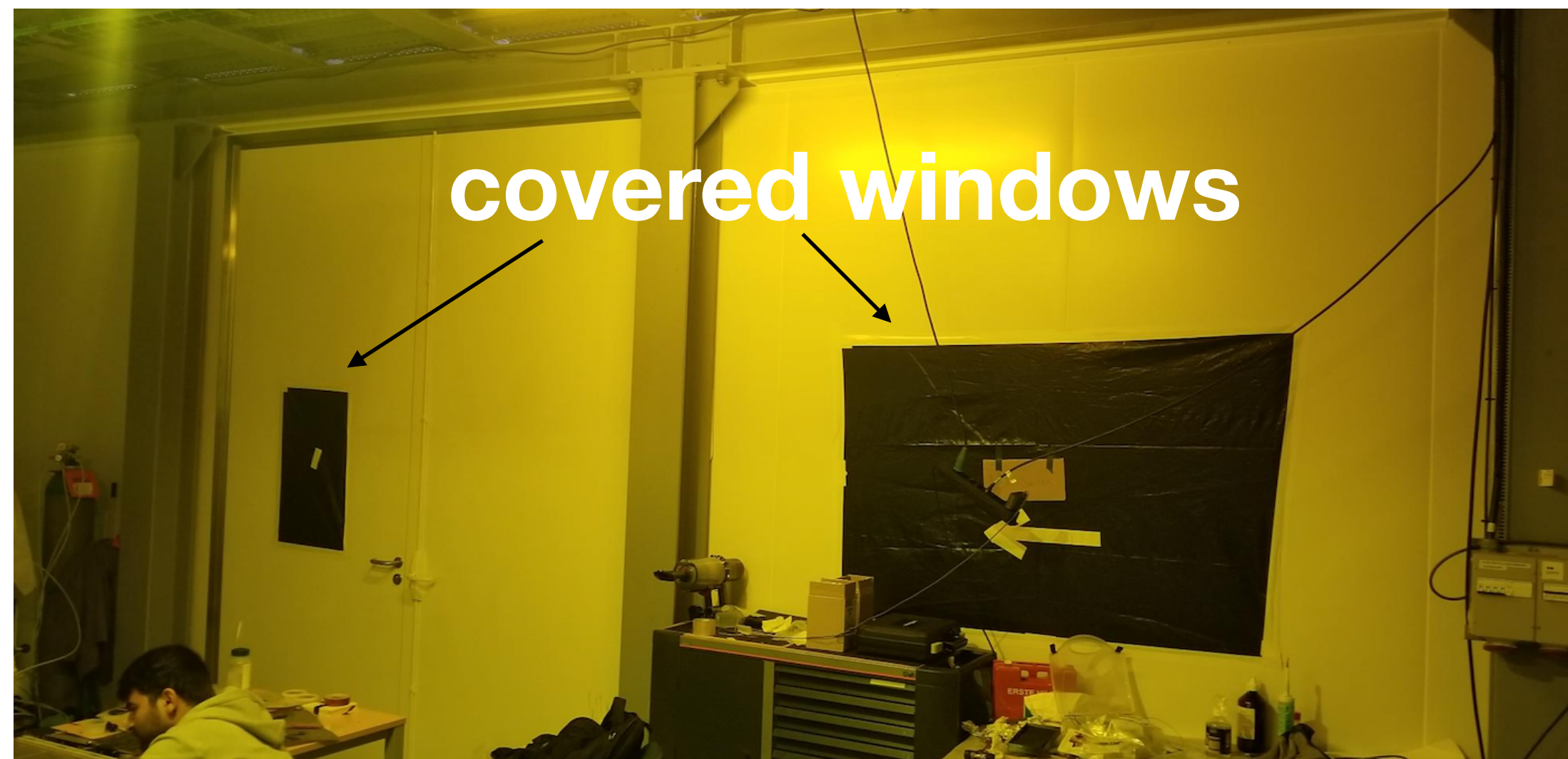
# PDS room at CERN

- Ambient light removed
  - Windows covered
  - Yellow light installed
- Currently four tables for tables for arapuca assembly
- Tooling
- Storage areas
- Cabinet requested
- Soldering station
- Should get rid of Ariadne stuff



**below control rooms in mezzanine**

# PDS room at CERN



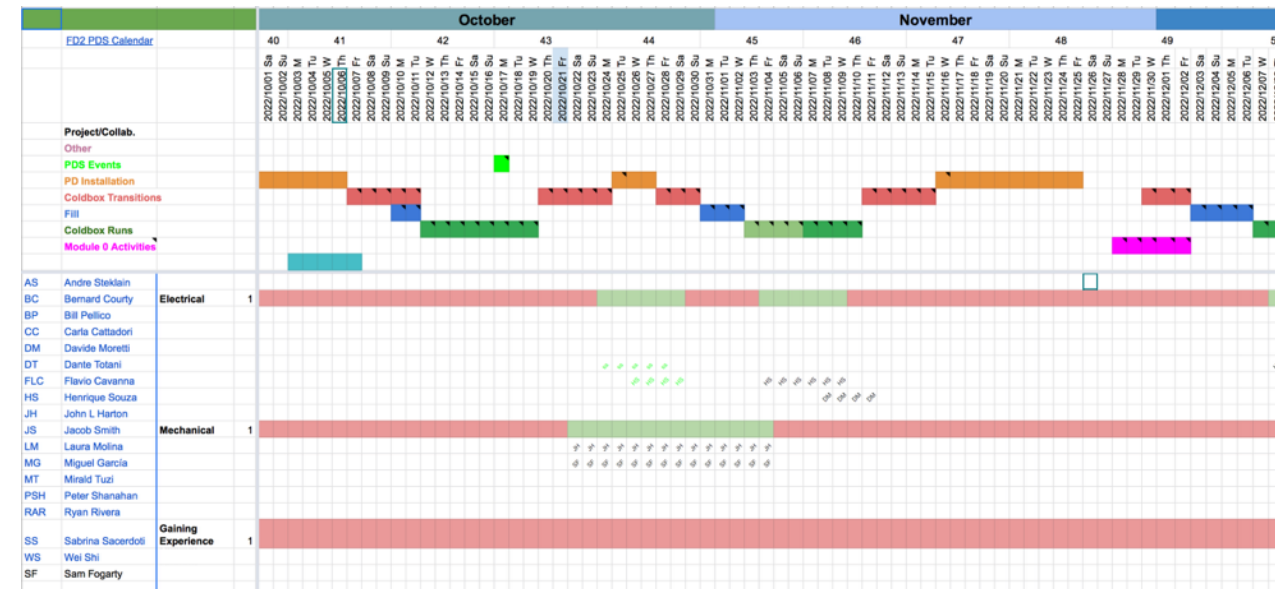
Courtesy of Jay

# People at CERN

- A single spreadsheet for cold boxes and Module-0

[https://docs.google.com/spreadsheets/d/1qT\\_wY5rvEtjS2t741bd8TGejxSAtKZIWIWu3m8GozzA/edit?usp=sharing](https://docs.google.com/spreadsheets/d/1qT_wY5rvEtjS2t741bd8TGejxSAtKZIWIWu3m8GozzA/edit?usp=sharing)

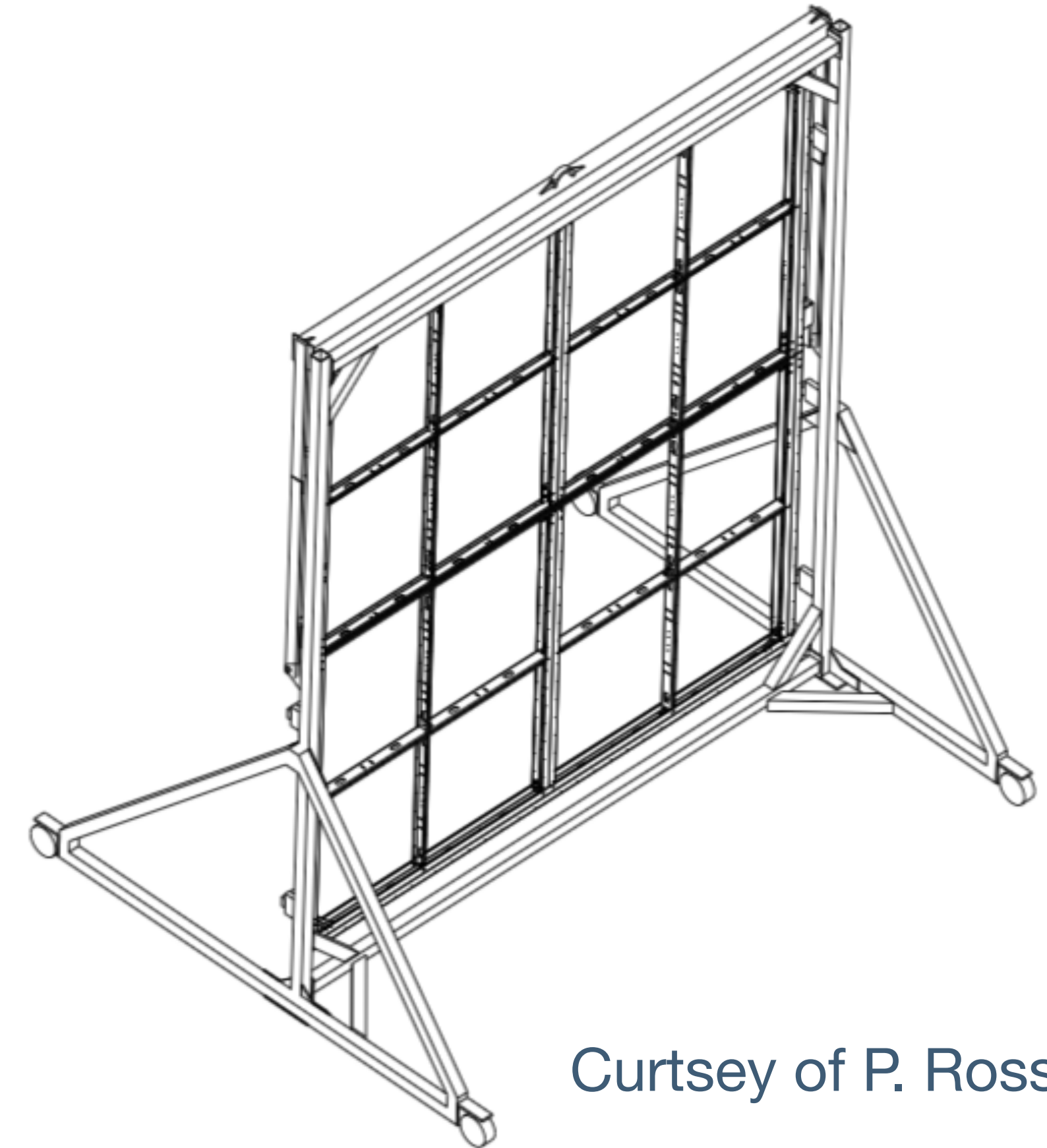
- People traveling to CERN and willing to help should fill it



- Several teams (4?) need to be configured to ensure we can assemble 4 modules in parallel if needed
- Some people would have to be trained
- Ongoing planning

# Cathode availability for PDS

- Cathode available on cartwall for PDS installation from Dec 14th week of January 16th
- We have a complete week after Christmas to mount 4 modules and install them in cathode

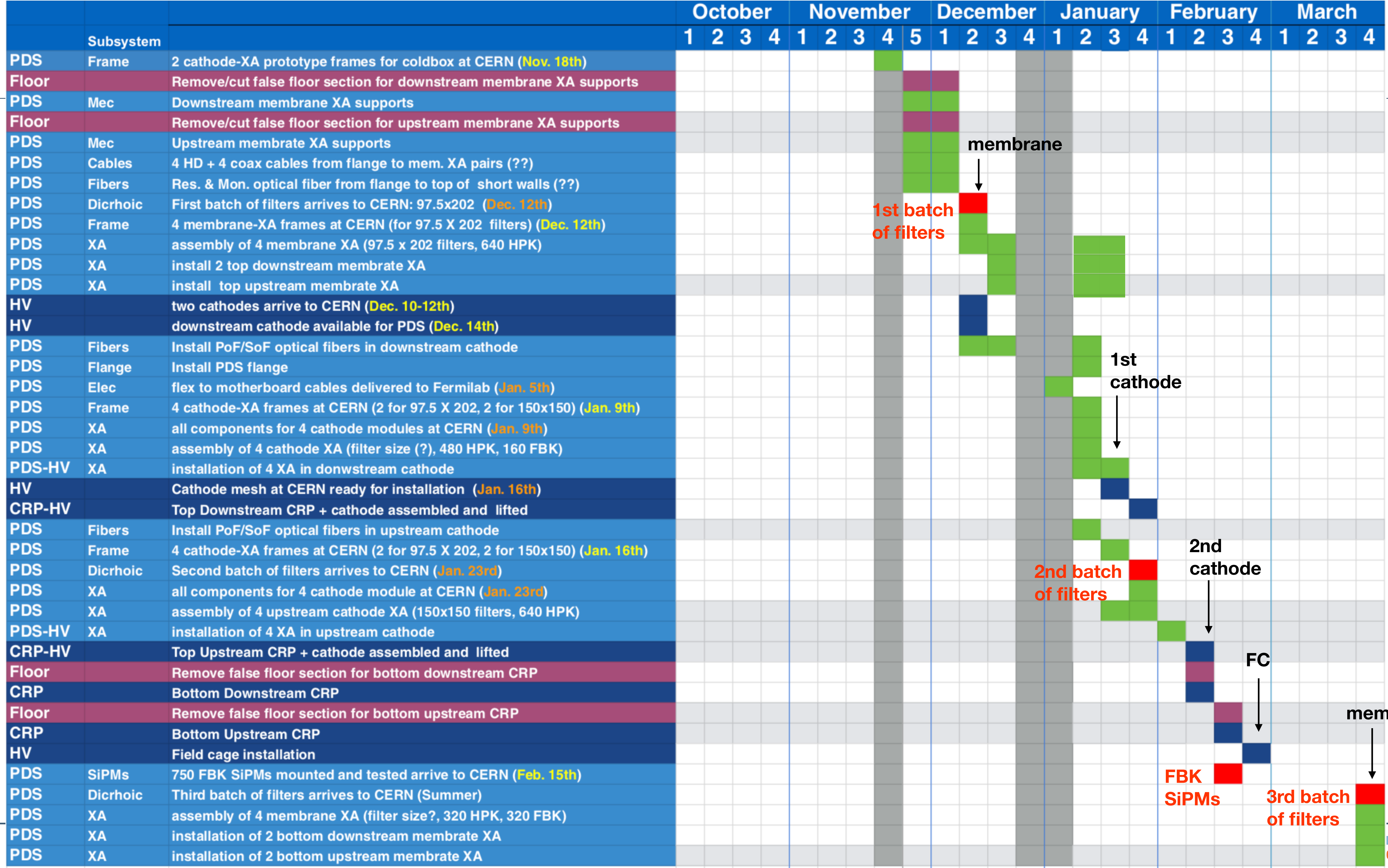


Curtsey of P. Rossier

- The displayed date is Friday and refers to the end of the activity
- At least 5 working days foreseen for each section

	previous version (last meeting)	current version (Filippo's info)	Goal for next version	available working days	comment
top membrane 1	Dec. 12th	Dec. 12th		8 days	
cathode 1	Jan. 9th	Jan. 9th		5 days	Try to get few more days by delaying cathode installation to mid/end of the week after
top membrane 2	Dec. 12th	Jan. 23rd	Jan 30th		Try to get few more days by delaying cathode installation to mid/end of the week after
cathode 2	Feb. 6th	Jan. 23th	Feb 6th	5 days	Try to get few more days by delaying cathode installation to mid/end of the week after
bottom membrane 1 & 2	Feb. 27th	Mar. 20th			Contingency for FBK SiPMs





## • PDS requests

- Bring in, assemble and lift the field cage support structure -> Week of 28th of November
- Install the vertical cable trays and the PDs supports on the walls -> Week of 5th of December **Move to Dec. 12th. Install also monitoring fibers and copper cables**
- Install of top PD system on the upstream wall -> Week of 5th of December. If the cathode is not installed, the PDs can be installed after the CRP is installed.
- Install the first CRP without cathode in the upstream position -> Week of 12th of December **must be moved to week of Dec. 12th (or even 19th), because frame and filters arrive on Dec. 12th**
- \* End of the year break from 22nd of December to 4th of January
- Reposition the SGFTs -> Week of 9th of January
- Install the cathode on first CRP -> Week of 16th of January **OK. Try to delay this to mid/end of that week to get few more days for XA installation in first cathode**
- Connect and test TDE on first CRP -> Week of 23rd of January
- Install the top PD system on the downstream wall -> Week of 23rd of January **OK. By te end of that week since filters arrive the 23rd and we have to assemble two XA**
- Install the second CRP with cathode in the upstream position -> Week of 30th of January **OK. Try to delay this to mid/end of that week to get few more days for assembly of 4 XA and installation on 2nd cathode**
- Connect and test TDE on second CRP -> Week of 6th February
- Install the field cage except the walls to allow bottom CRP installation -> Week of 13th and week of 20th of February
- Install the HV extender and the HV feedthrough -> Week of 20th of February. It can be done later on, it's independent of almost everything
- Install PD and CE penetration connect the cathode and the fibres of the PDs on the cathode -> Week of 27th of February
- Remove and clean part of the false floor install first bottom CRP -> Week of 6th of March
- Install and cable the second bottom CRPs -> Week 13th of March
- Test the BDE -> Week of 20th of March
- Install remaining bottom PD modules on the walls -> Week of 20th of March (can be done earlier)
- Remove the false floor and remove man lift -> Week of 27th of March
- Remove the TCO beam install the last field cage wall and set field cage in final position -> Week of 3rd of April
- Install the instrumentation (and beam plug) -> From the week of 10th of April