ProtoDUNE-VD PDS meeting 11/11/2022

ProtoDUNE-VD PDS installation schedule and people available at CERN

- A. Cervera (IFIC-Valencia)
- F. Marinho (ITA-São Paulo)
- S. Sacerdoti (APC-Paris)
- D. Totani (UCSB-Santa Bárbara)





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 !!!!!

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



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





New in this version

- 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







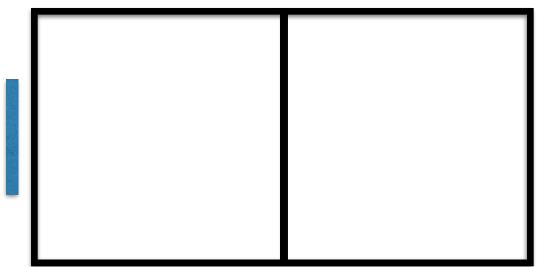
Top upstream membrane

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

9people (CSU, MiB, IFIC)

3 people (Ciemat)





					-	ΓCΟ	
Mon	Tue	Wed	Thu	Fri	Sat	Sun	
12	13	14	15	16	17	18	
r	nodule assemb						
			module testing				
19	20	21	22	23	24	25	
	module testing						
mod	ule assembly (f	ilters)					
26	27	28	29	30	31	1 Jan	
2	3	4	5	6	7	8	
9	10	11	12	13	14	15	
n	nodule installati	on					
16	17	18	19	20	21	22	
4	4						



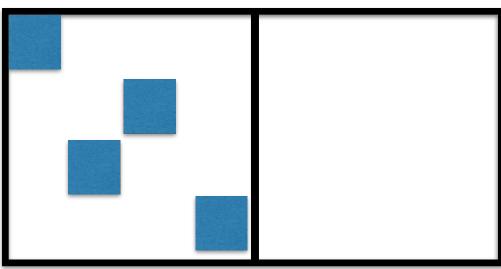
Upstream cathode

- 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 5 people (Ciemat, CSU, IFIC)

9 people (CSU, MiB, IFIC)

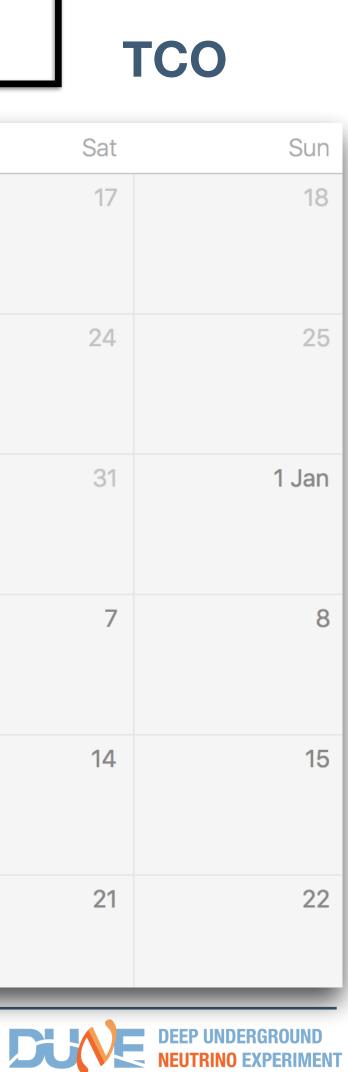






December 2022

Mon	Tue	Wed	Thu	Fri	Sat	
12	13	14	15	16	17	
	module	assembly (exce	pt filters)			
			module testing			
19	20	21	22	23	24	
module	assembly (exce	ept filters)				
	module testing					
26	27	28	29	30	31	
Januar	y 2023					
2	3	4	5	6	7	
9	10	11	12	13	14	
		m	odule installation	on		
16	17	18	19	20	21	
n	nodule installati	on				

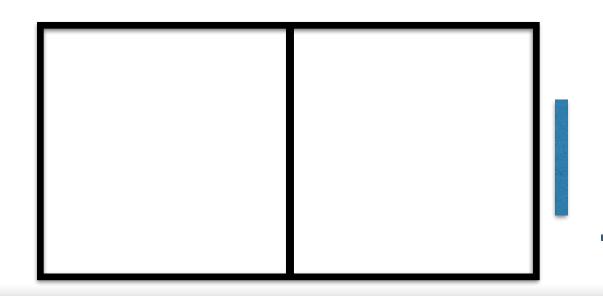


Top downstream membrane

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

1 person (CSU)



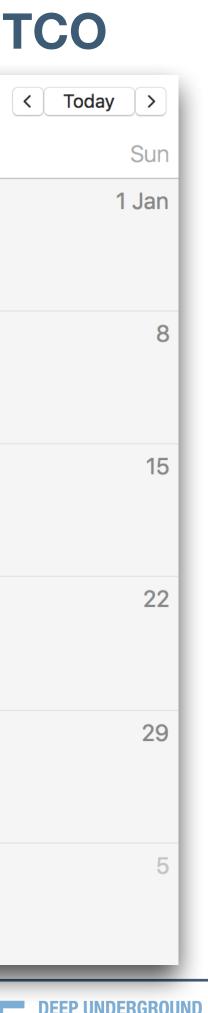


January 2023

Mon	Tue	Wed	Thu	Fri	Sat	
26	27	28	29	30	31	
2	3	4	5	6	7	
9	10	11	12	13	14	
16	17	18	19	20	21	
	module a					
			module testing			
23	24	25	26 module asse	27 embly (filters)	28	
		module testing	9			
30 ule asse	31 embly (filters)	1 Feb	2	3	4	
m	odule installati	ion				



mod

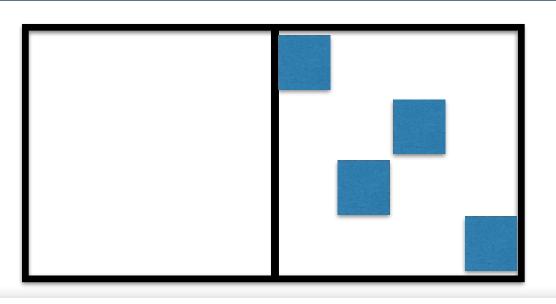


Downstream cathode

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

1 person (CSU)





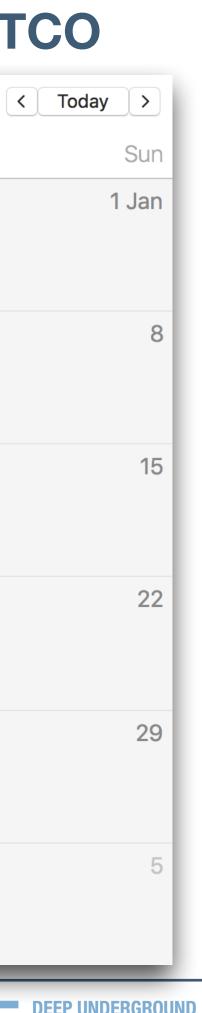
TCO

January 2023

Mon	Tue	Wed	Thu	Fri	Sat		
26	27	28	29	30	31		
2	3	4	5	6	7		
9	10	11	12	13	14		
16	17	18	19	20	21		
	module a	assembly (exce	ept filters)				
			module testing				
23	24	25	26	27	28		
			module asse	embly (filters)			
		module testing	g				
30	31	1 Feb	2	3	4		
ule asse	embly (filters)						
module installation							

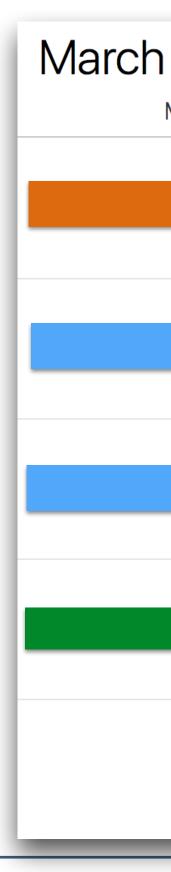


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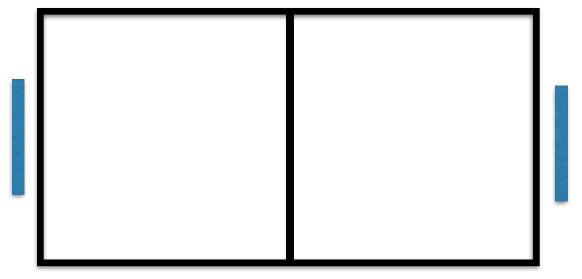


Bottom membrane, temporary

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







n 20	23					<
Mon	Tue	Wed	Thu	Fri	Sat	
27	28	1 Mar	2	3	4	
	n	nodule assemb	у			
6	7	8	9	10	11	
13	14	15	16	17	18	
		module testing				
20	21	22	23	24	25	
	m	odule installatio	on			
27	28	29	30	31	1 Apr	

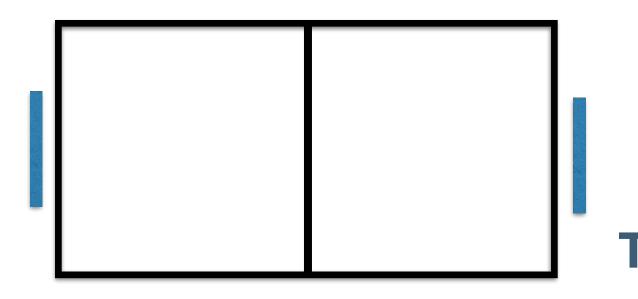


backup

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



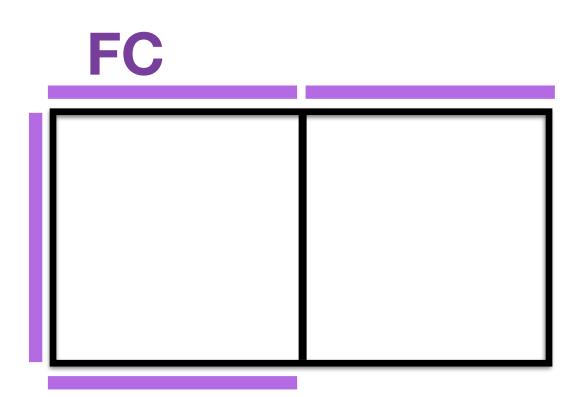






Access to second cathode

- 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





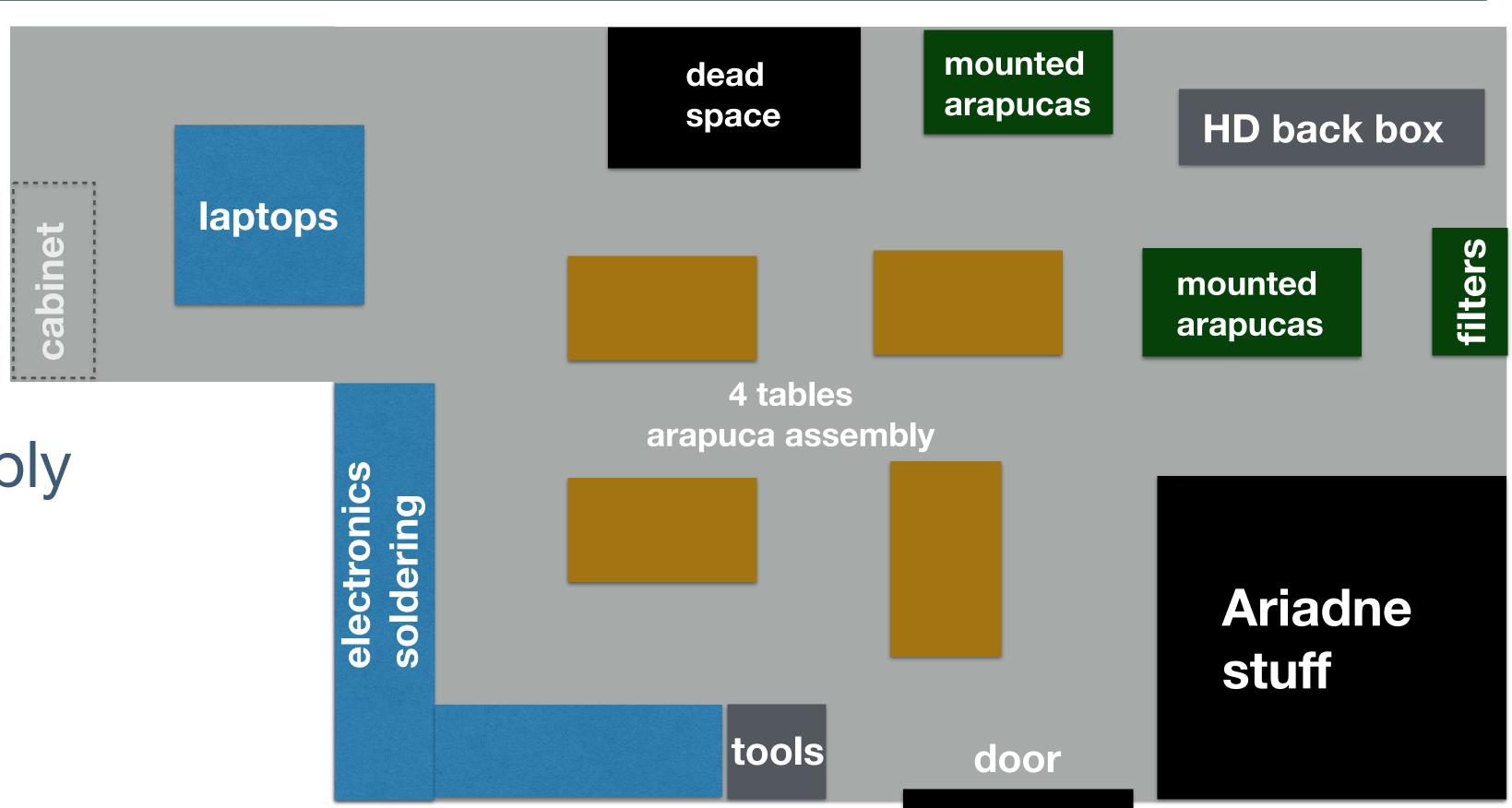




PDS room at CERN

- 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

















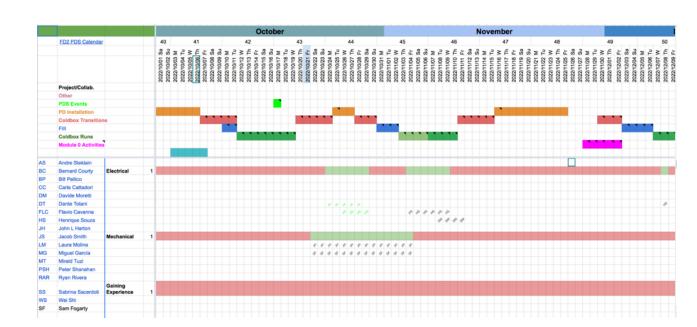


People at CERN

A single spreadsheet for cold boxes and Module-0

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



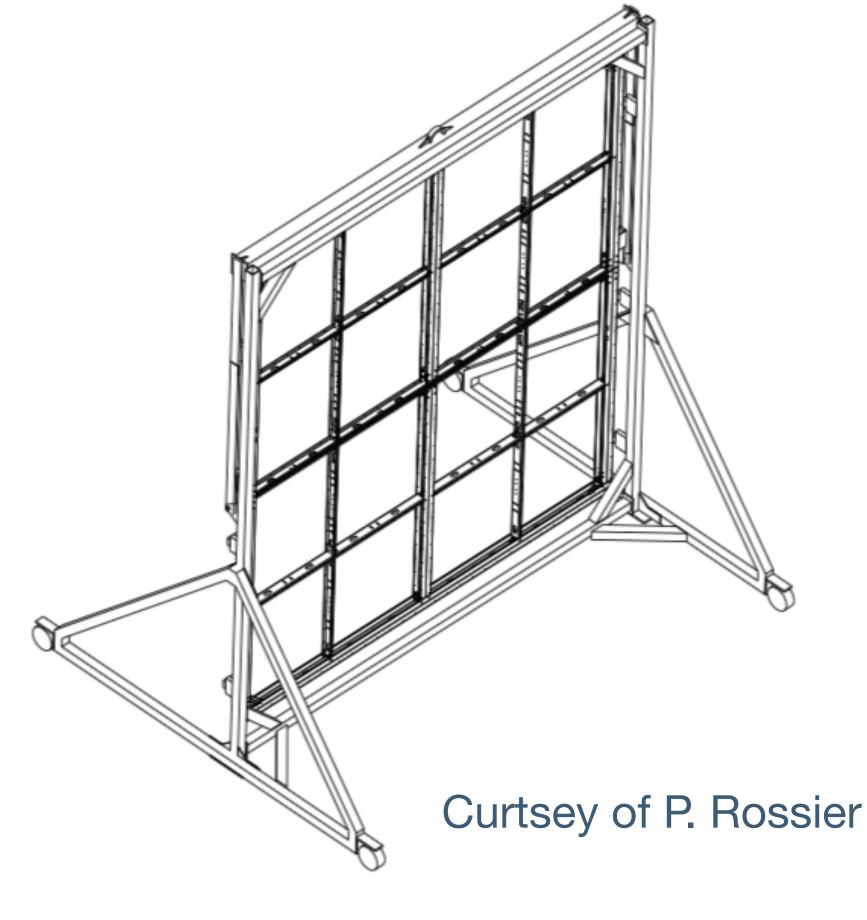


Cathode availability for PDS

- January 16th
- We have a complete week after Christmas to mount 4 modules and install them in cathode



Cathode available on cartwall for PDS installation from Dec 14th week of







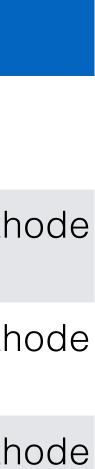
- The displayed date is Friday and refers to the end of the activity
- At least 5 working days foreseen for each section

	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 cath 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 cath 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 cath installation to mid/end of the week after
bottom membrane 1 & 2	Feb. 27th	Mar. 20th			Contingency for FBK SiPMs



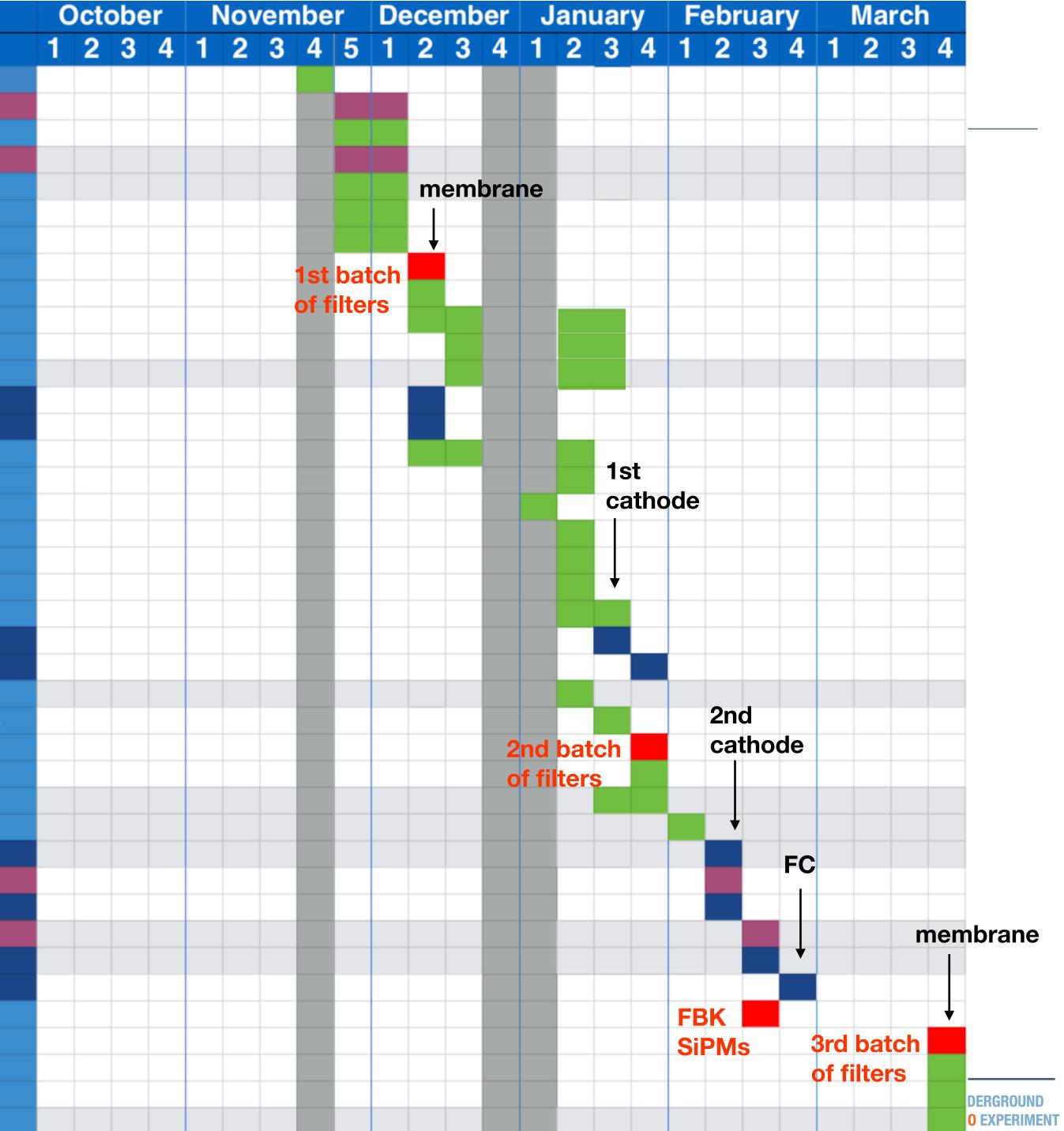
fers to the end of the activity reach section





	Subsystem	
PDS	Frame	2 cathode-XA prototype frames for coldbox at CERN (Nov. 18th)
Floor		Remove/cut false floor section for downstream membrane XA supports
 PDS	Мес	Downstream membrane XA supports
Floor		Remove/cut false floor section for upstream membrane XA supports
PDS	Мес	Upstream membrate XA supports
PDS	Cables	4 HD + 4 coax cables from flange to mem. XA pairs (??)
PDS	Fibers	Res. & Mon. optical fiber from flange to top of short walls (??)
PDS	Dicrhoic	First batch of filters arrives to CERN: 97.5x202 (Dec. 12th)
PDS	Frame	4 membrane-XA frames at CERN (for 97.5 X 202 filters) (Dec. 12th)
PDS	ХА	assembly of 4 membrane XA (97.5 x 202 filters, 640 HPK)
PDS	ХА	install 2 top downstream membrate XA
PDS	ХА	install top upstream membrate XA
HV		two cathodes arrive to CERN (Dec. 10-12th)
ΗV		downstream cathode available for PDS (Dec. 14th)
PDS	Fibers	Install PoF/SoF optical fibers in downstream cathode
PDS	Flange	Install PDS flange
PDS	Elec	flex to motherboard cables delivered to Fermilab (Jan. 5th)
PDS	Frame	4 cathode-XA frames at CERN (2 for 97.5 X 202, 2 for 150x150) (Jan. 9th)
PDS	ХА	all components for 4 cathode modules at CERN (Jan. 9th)
PDS	ХА	assembly of 4 cathode XA (filter size (?), 480 HPK, 160 FBK)
PDS-HV	ХА	installation of 4 XA in donwstream cathode
HV		Cathode mesh at CERN ready for installation (Jan. 16th)
CRP-HV		Top Downstream CRP + cathode assembled and lifted
PDS	Fibers	Install PoF/SoF optical fibers in upstream cathode
PDS	Frame	4 cathode-XA frames at CERN (2 for 97.5 X 202, 2 for 150x150) (Jan. 16th)
PDS	Dicrhoic	Second batch of filters arrives to CERN (Jan. 23rd)
PDS	ХА	all components for 4 cathode module at CERN (Jan. 23rd)
PDS	ХА	assembly of 4 upstream cathode XA (150x150 filters, 640 HPK)
PDS-HV	ХА	installation of 4 XA in upstream cathode
CRP-HV		Top Upstream CRP + cathode assembled and lifted
Floor		Remove false floor section for bottom downstream CRP
CRP		Bottom Downstream CRP
Floor		Remove false floor section for bottom upstream CRP
CRP		Bottom Upstream CRP
HV		Field cage installation
PDS	SiPMs	750 FBK SiPMs mounted and tested arrive to CERN (Feb. 15th)
PDS	Dicrhoic	Third batch of filters arrives to CERN (Summer)
PDS	XA	assembly of 4 membrane XA (filter size?, 320 HPK, 320 FBK)
PDS	XA	installation of 2 bottom downstream membrate XA
PDS	XA	installation of 2 bottom upstream membrate XA







PDS requests

- Bring in, assemble and lift the field cage support structure -> Week of 28th of November

- Install the first CRP without cathode in the upstream position -> Week of 12th of December
- * End of the year break from 22nd of December to 4th of January
- Reposition the SGFTs -> Week of 9th of January
- 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
- 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



- 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. must be moved to week of Dec. 12 th (or even 19th), because frame and filters arrive on Dec. 12th

- 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

- 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



