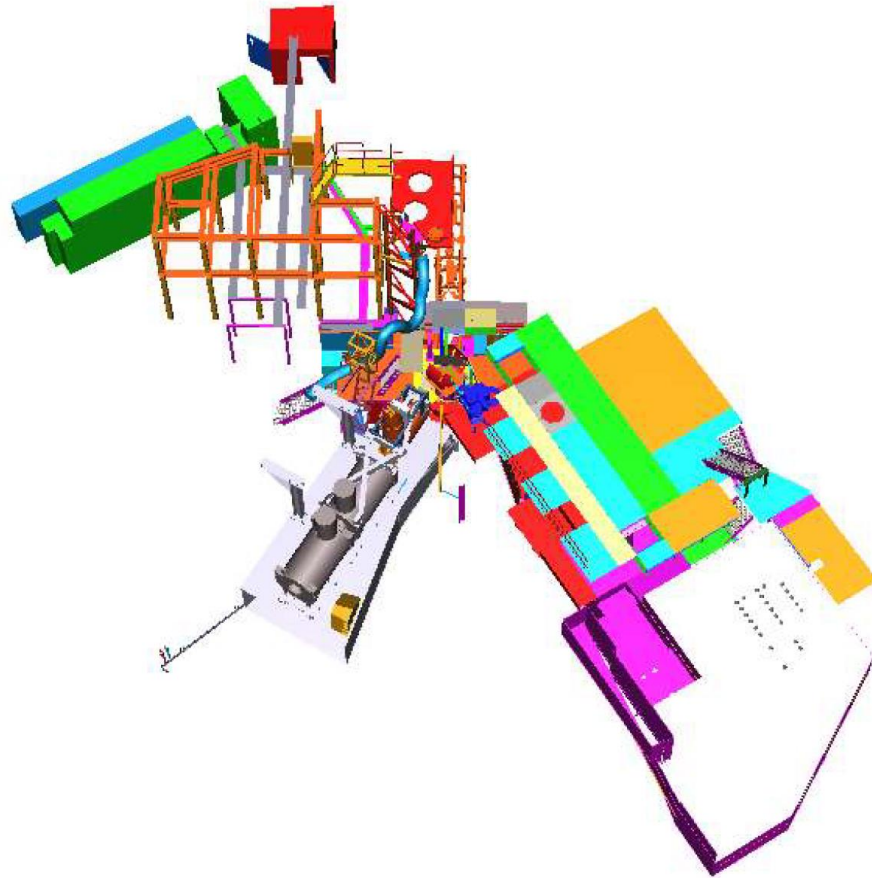


# SoLID possible tests

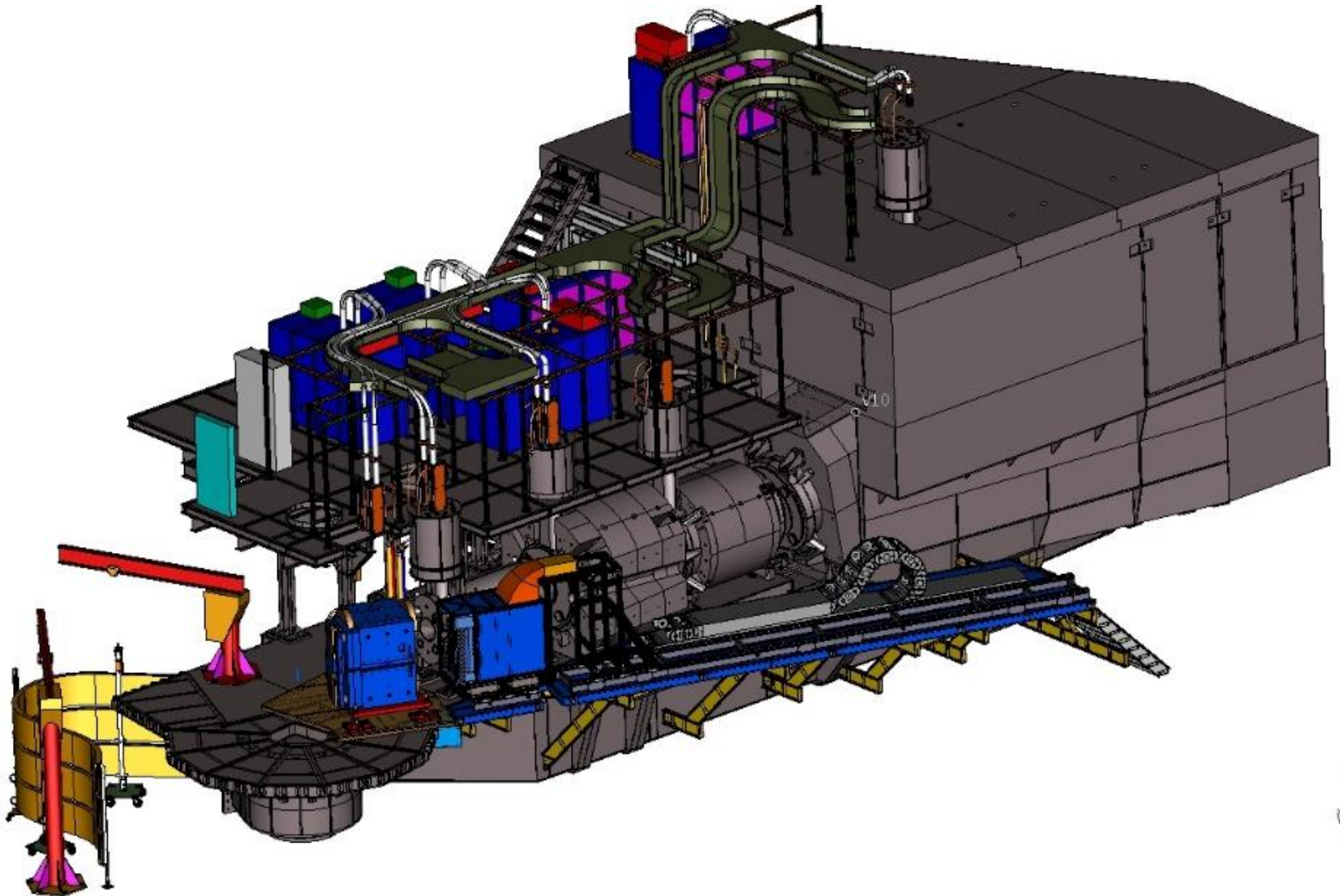
Alexandre Camsonne

June 28th 2021

# Hall C



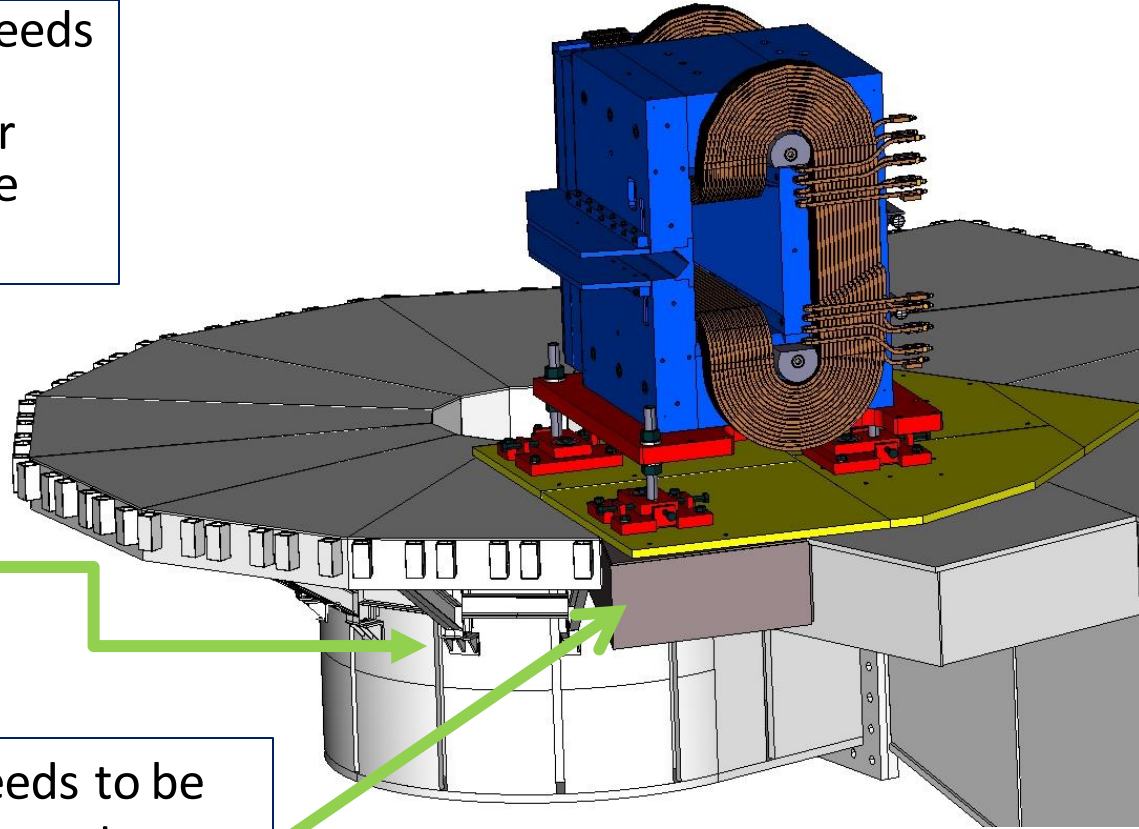
# NPS design & purchasing status



# NPS design & purchasing status (cont)

## Sweeper supporting structure (cont)

Target access platform support needs to be removed and replaced with larger and heavier duty section or reinforce existing. In design phase (10% completion).

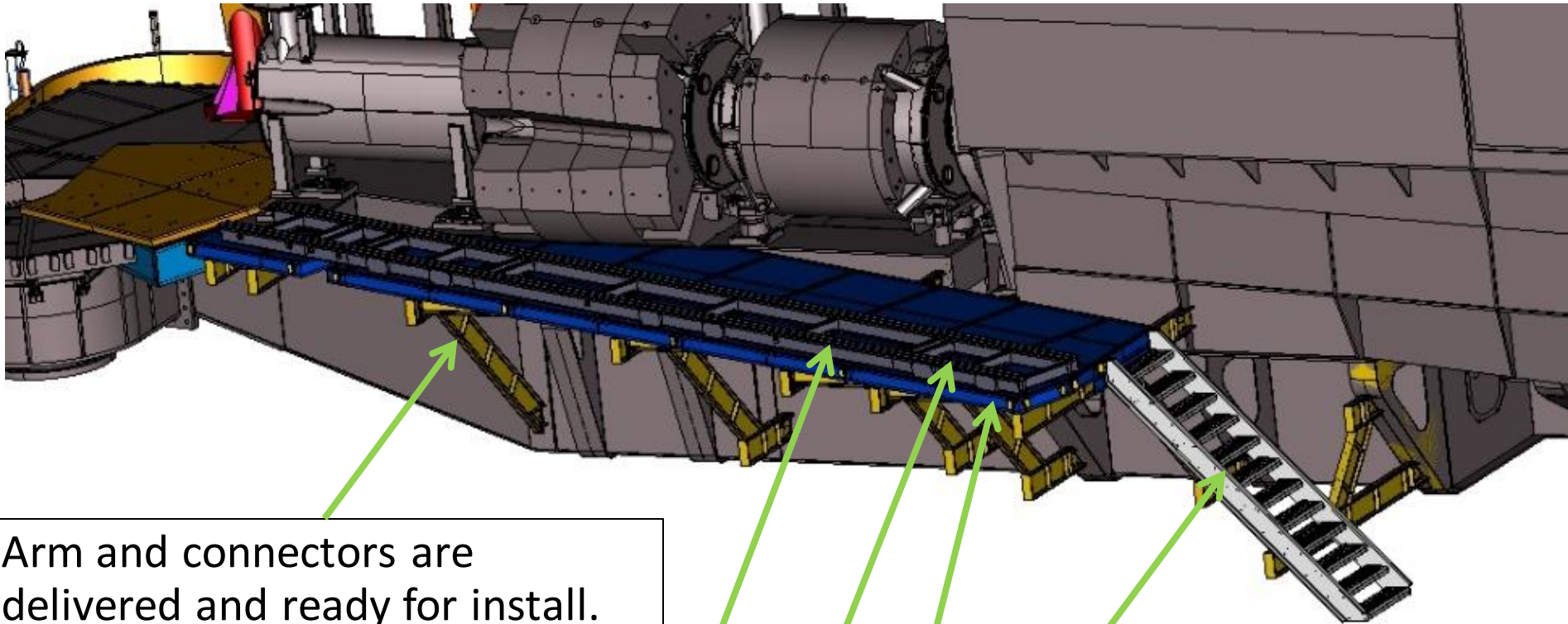


Target access platform section needs to be removed and replaced with larger and heavier duty section. New section delivered.



# NPS design & purchasing status (cont)

## Detector supporting structure



Arm and connectors are delivered and ready for install.

Rail base weldments are delivered.

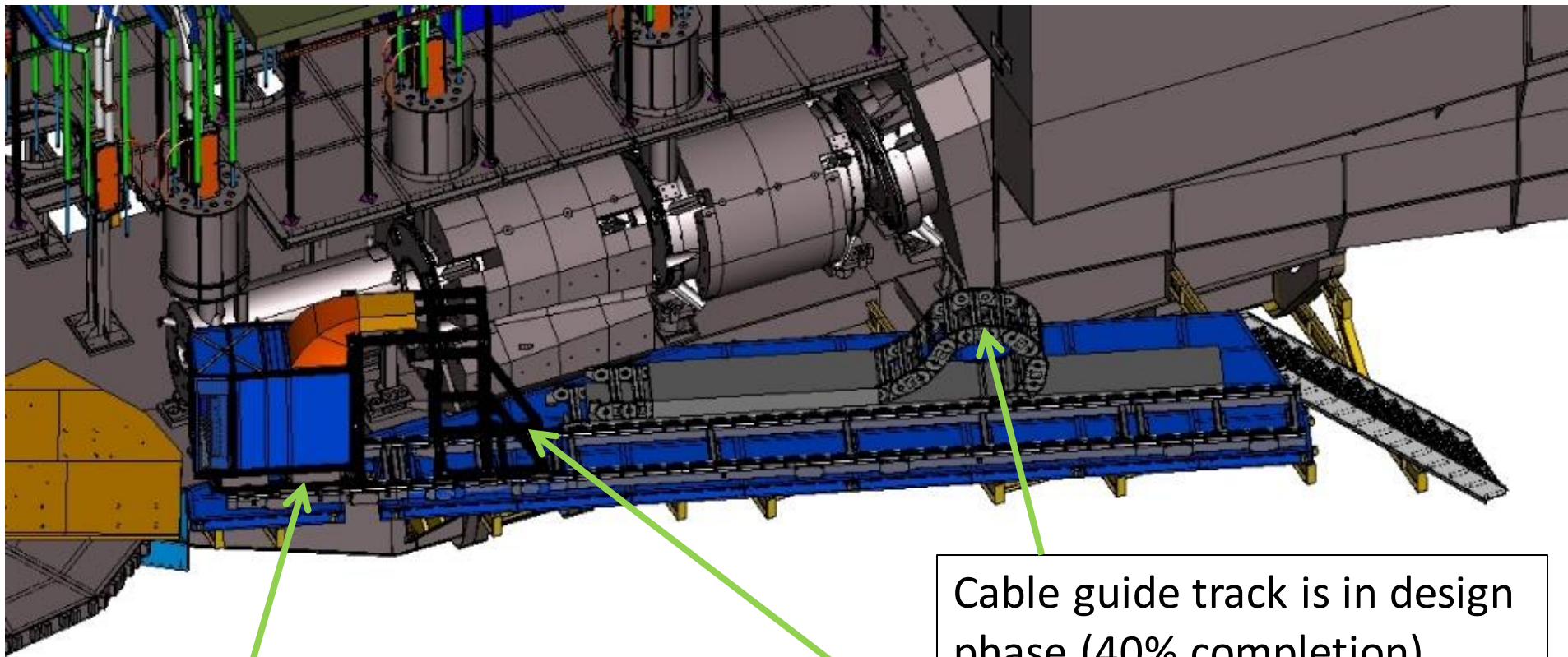
Rails and slides need to be refurbished.

Platform weldments are delivered and ready for install.

Staircase in design phase (50% completion).

# NPS design & purchasing status (cont)

## Detector supporting structure (cont)



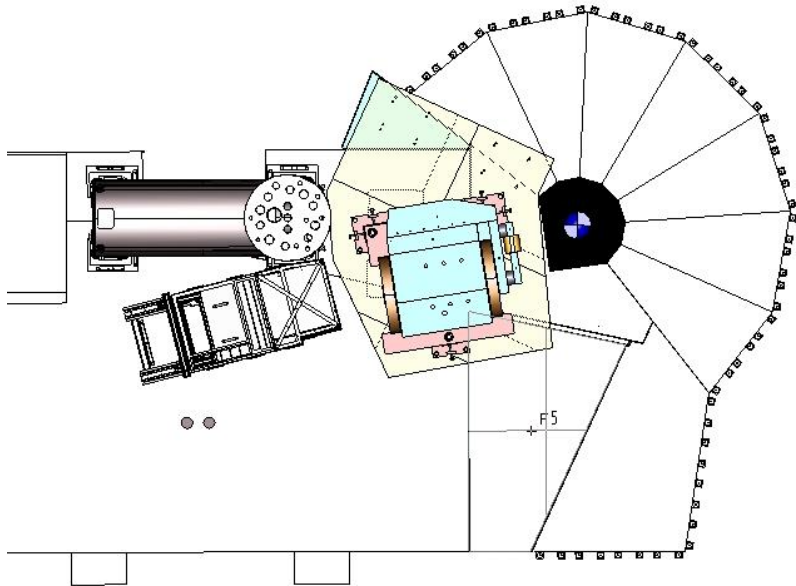
Detector slide cart is in design phase (75% completion).

Cable guide track is in design phase (40% completion).

Cable slide cart is in design phase (75% completion).

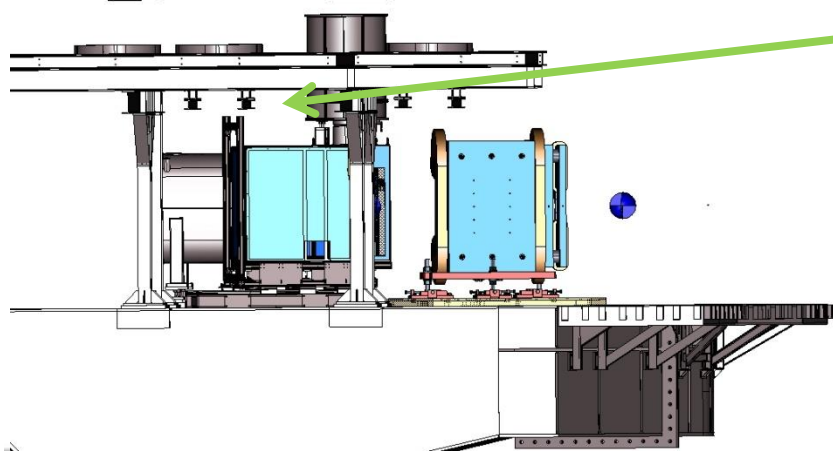
# NPS design & purchasing status (cont)

## Detector supporting structure (cont)



Detector on SHMS left will be kept on a rail section and cart used to position detector in place.

Cables will be supported by underside of SHMS platform. In design phase (30% completion).





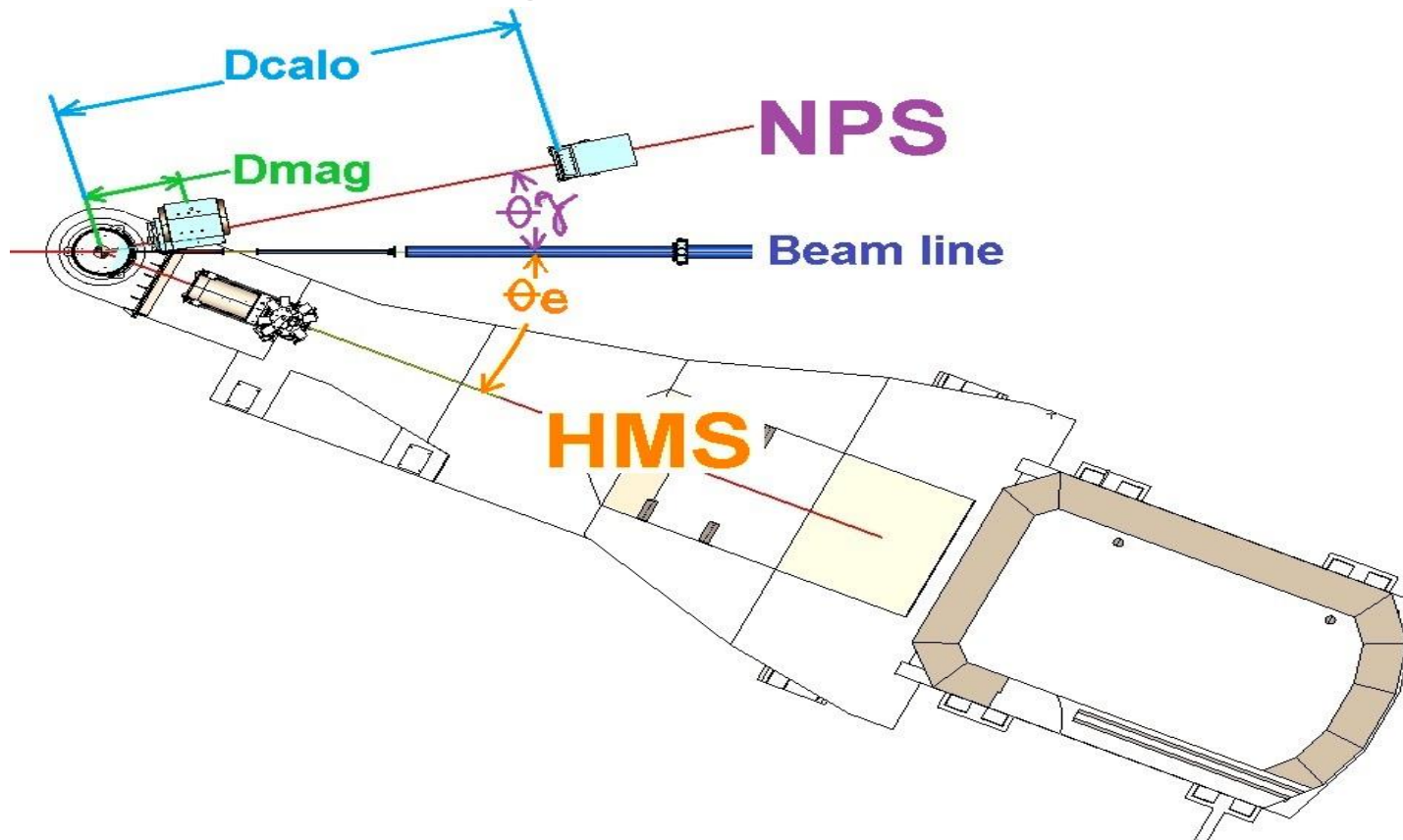
# NPS Layout configurations

$\theta_\gamma$  = angle between beam and NPS

$\theta_e$  = angle between beam and HMS

$D_{mag}$  = distance between target center and sweeper center

$D_{calo}$  = distance between target center and detector face





# NPS Layout configurations<sub>(cont)</sub>

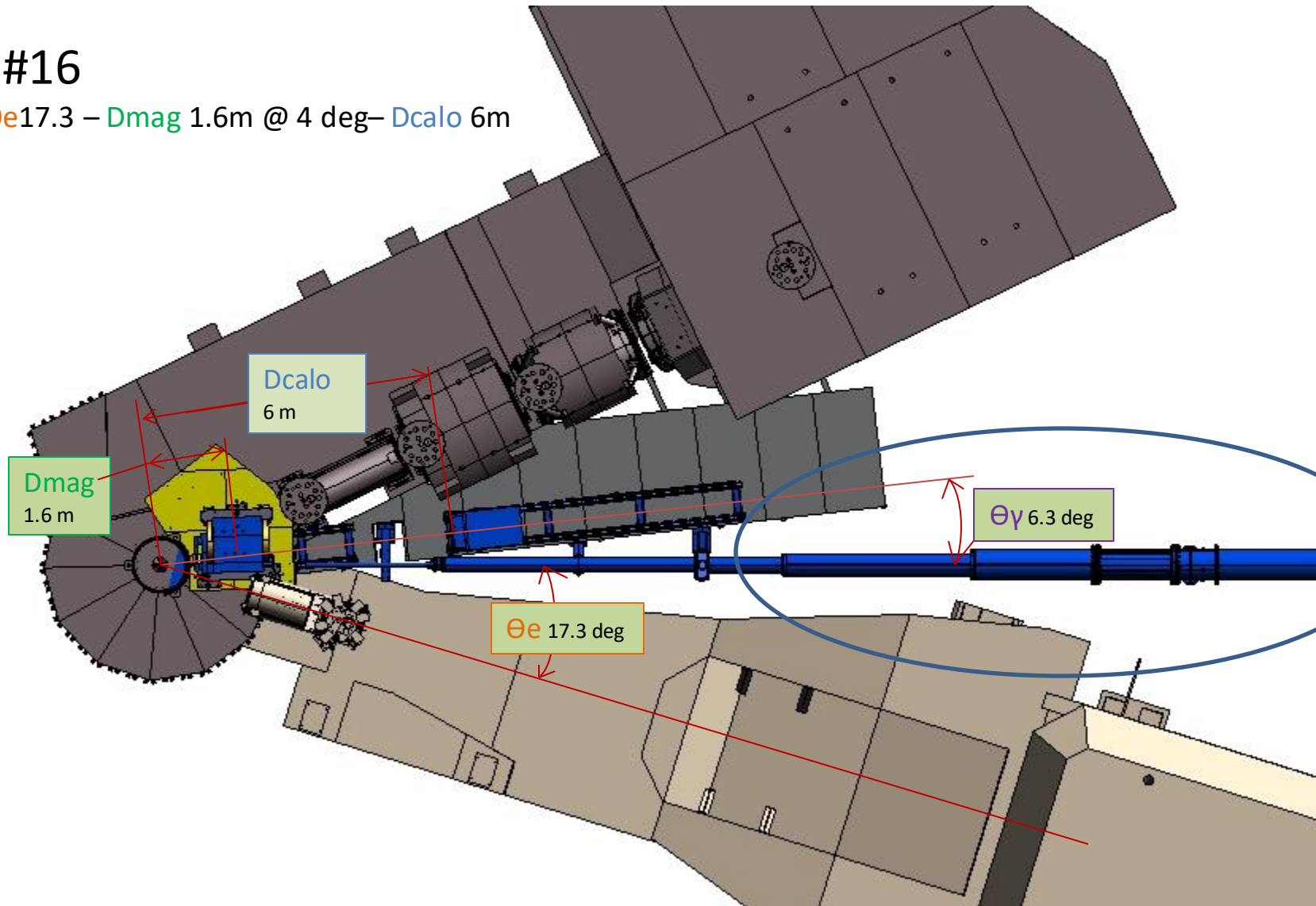
SETTING	NPS location	NPS angle (deg)	HMS angle (deg)	D magnet (m)	D calorimeter (m)	Magnet angle (deg)	Beam energy (GeV)	Beam current (uA)	Time (hours)
7	SHMS right	21.7	11.7	1.6	3.0	5.5	11	28.0	48
11	SHMS right	19.8		1.6	3.0	5.5	11	28.0	120
12F	SHMS right	17.2	17.84	1.6	6.0	4.0 or 5.5	11	28.0	240
8E	SHMS right	16.6	15.65	1.6	3.0	5.5	11	28.0	120
3B	SHMS right	16.2	11.7	1.6	3.0	5.5	11	28.0	96
5C	SHMS right	12.4	15.30	1.6	3.0	5.5	11	28.0	72
15A	SHMS right	10.6		1.6	4.0	4.0 or 5.5	11	50.0	24
17D	SHMS right	7.9	24.15	1.6	3.0	5.5	11	50.0	120
13	SHMS right	6.3	27.90	1.6	6.0	4.0	11	11.0	24
16	SHMS right	6.3	17.30	1.6	6.0	4.0	11	11.0	24
6	SHMS right	20.2		1.6	3.0	5.5	8.8	28.0	72
10	SHMS right	17.8		1.6	3.0	5.5	8.8	28.0	24
2	SHMS right	14.7		1.6	3.0	5.5	8.8	28.0	96
4	SHMS right	10.3		1.6	4.0	4.0 or 5.5	8.8	50.0	24
14	SHMS right	9.2		1.6	4.0	4.0 or 5.5	8.8	5.0	24
9	SHMS right	13.8		1.6	3.0	5.5	6.6	28.0	120
1	SHMS right	11.7		1.6	3.0	5.5	6.6	28.0	24

# NPS Layout configurations<sub>(cont)</sub>

SETTING	NPS location	NPS angle (deg)	HMS angle (deg)	D magnet (m)	D calorimeter (m)	Magnet angle (deg)	Beam energy (GeV)	Beam current (uA)	Time (hours)
4A	SHMS right	14.2	40.1	1.6	9.0	4.0 or 5.5	8.8	5	20
4B	SHMS right	17.9	33.7	1.6	7.0	4.0 or 5.5	8.8	15	20
4C	SHMS right	22.5	27.8	1.6	5.0	4.0 or 5.5	8.8	30	20
5A	SHMS right	11.0	41.7	1.6	11.0	4.0 or 5.5	11	20	15
5B	SHMS right	13.8	35.3	1.6	8.0 (9.0?)	4.0 or 5.5	11	30	20
5C	SHMS right	16.9	30.0	1.6	7.5	4.0 or 5.5	11	60	20
5D	SHMS right	19.7	26.3	1.6	6.0	4.0 or 5.5	11	60	40
4E	SHMS left	34.0	18.9	1.6	4.0	5.5	8.8	60	50
5E	SHMS left	29.9	17.8	1.6	4.0	5.5	11	60	120
4D	SHMS left	26.9	23.7	1.6	4.0	5.5	8.8	60	30
	E12-06-114	Larger @ 2.2GeV/pass	Smaller @ 2.2GeV/pass				2.1 GeV/pass		
48_J1	SHMS right	13.79	18.83	1.6	3.0	?	10.617	30	70
60_J1	SHMS right	11.76	33.17	1.6	3.0	?	8.517	30	200
60_J2	SHMS right	14.76	21.64	1.6	3.0	?	10.617	30	170
60_J3	SHMS right	6.41	57.77	1.6	4.0	?	8.517	50	300

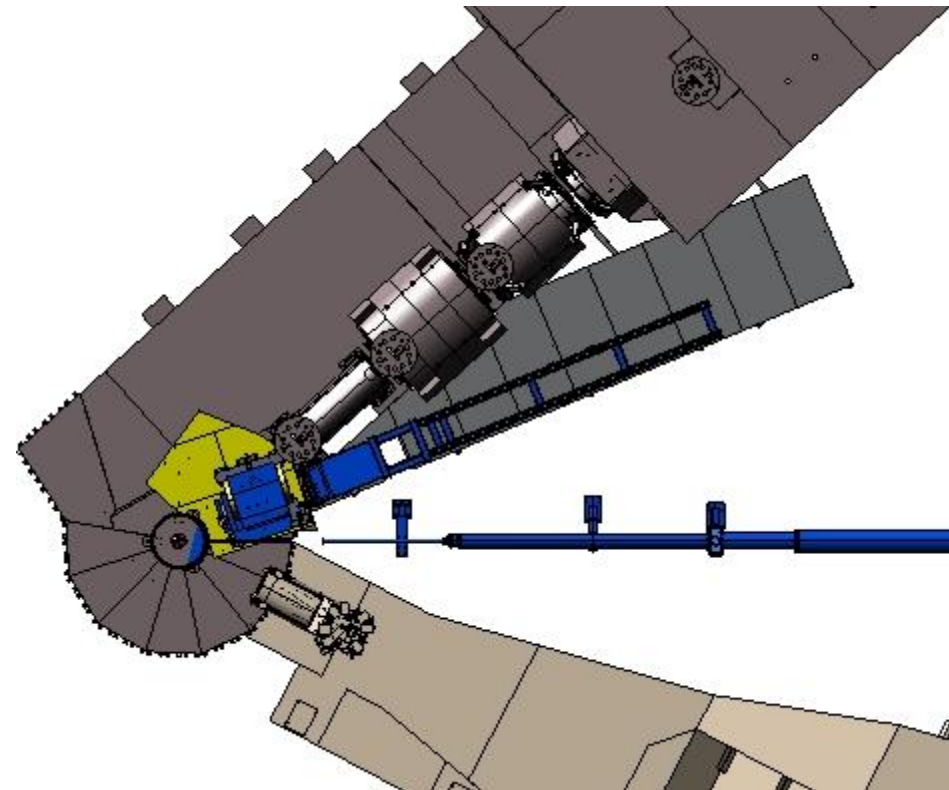
# NPS Layout configurations<sub>(cont)</sub>

- DVCS #16
- $\Theta_{\gamma} 6.3$  –  $\Theta_e 17.3$  –  $D_{mag} 1.6\text{m}$  @ 4 deg –  $D_{calo} 6\text{m}$

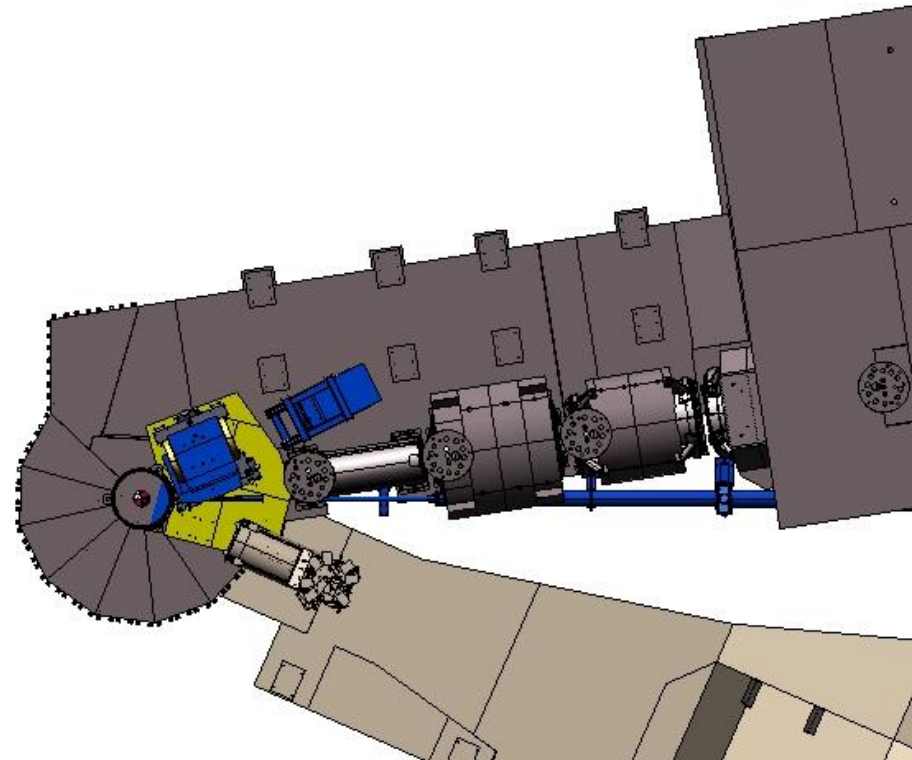


# NPS Layout configurations<sub>(cont)</sub>

- WACS/PION #4C
- $\Theta_y 22.5 - \Theta_e 27.8 - D_{mag} 1.6m @ 4 \text{ or } 5.5 \text{ deg}$   
 $D_{calo} 3m$



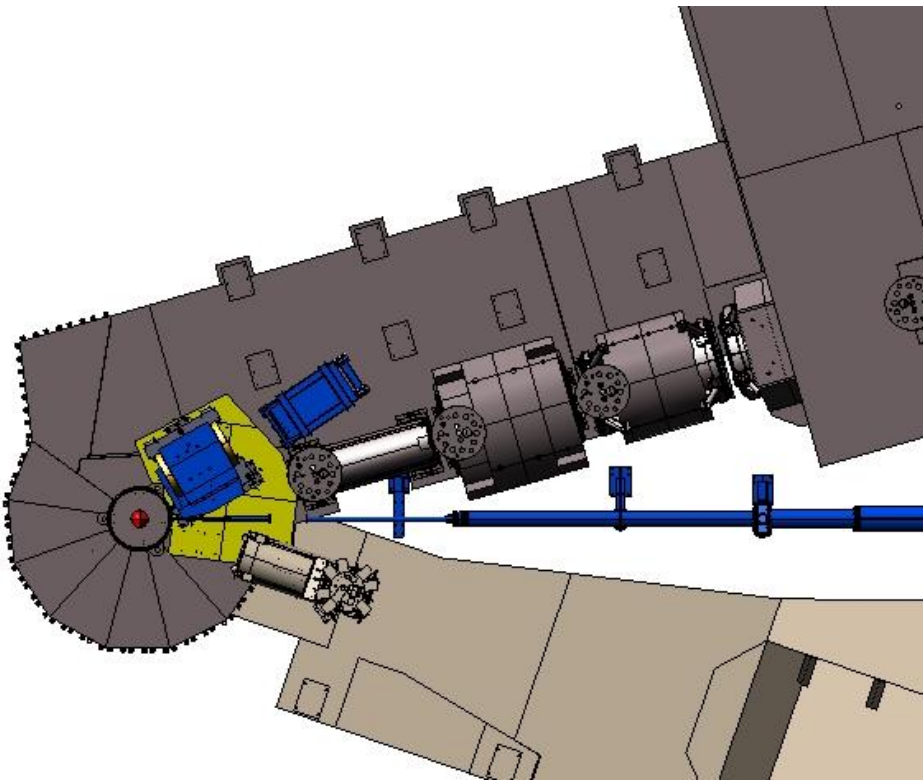
- WACS/PION #4D
- $\Theta_y 26.9 - \Theta_e 23.7 - D_{mag} 1.6m @ 5.5 \text{ deg}$   
 $D_{calo} 4m$



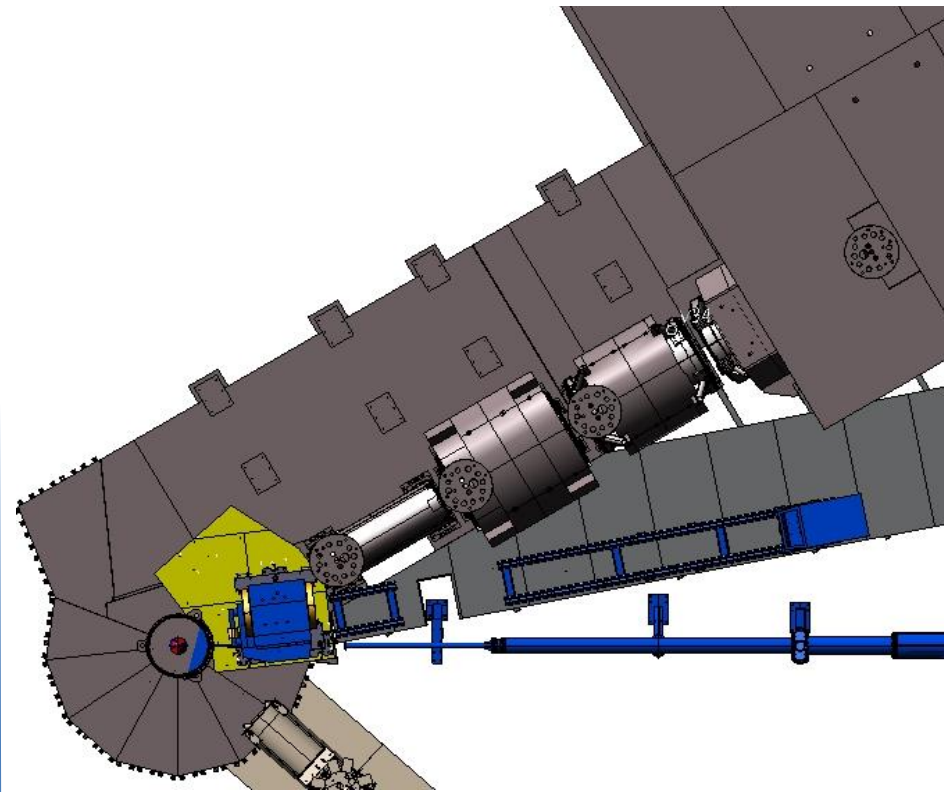


# NPS Layout configurations<sub>(cont)</sub>

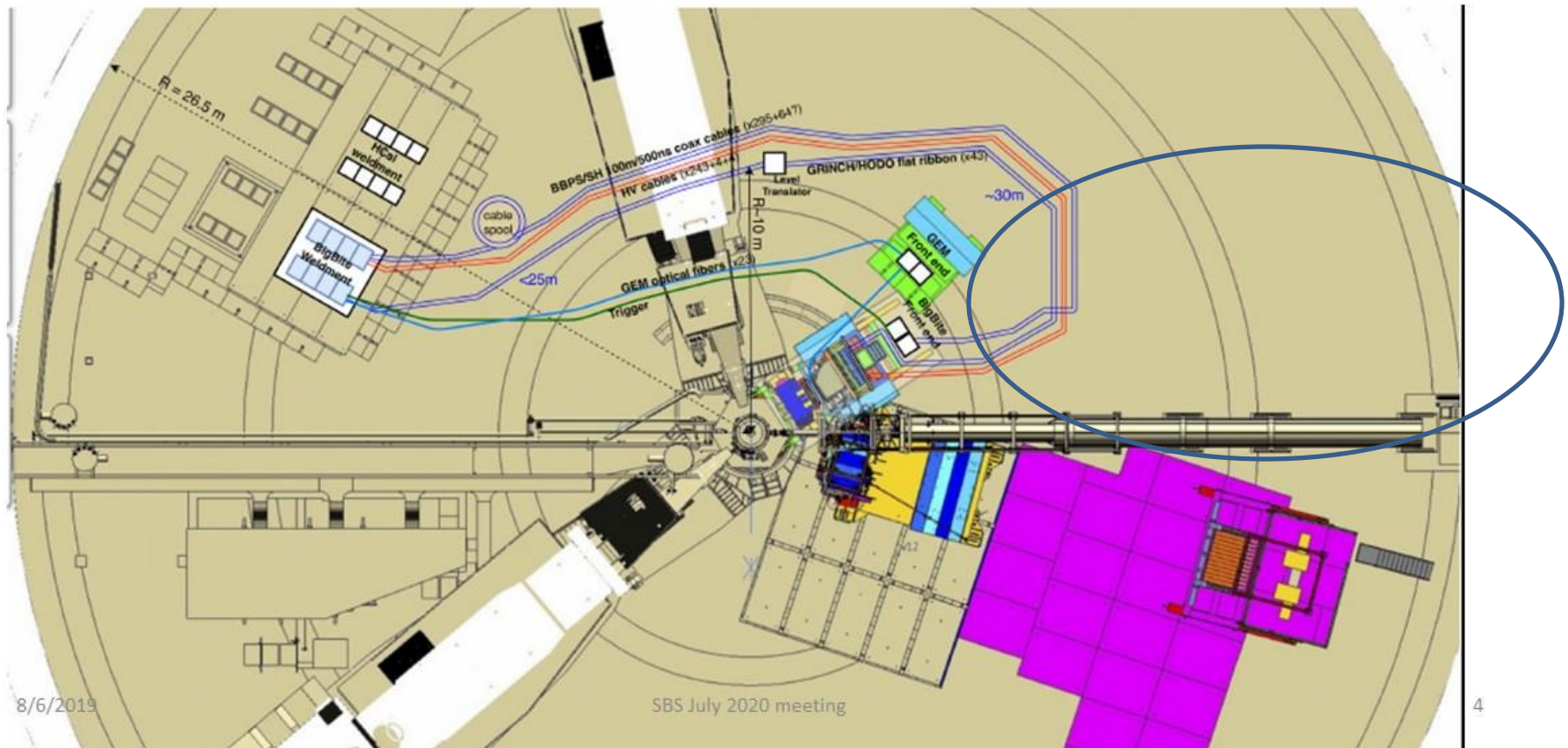
- WACS/PION #4E
- $\Theta\gamma 34.0 - \Theta e 18.9 - D_{mag} 1.6m @ 5.5 \text{ deg}$   
 $D_{calo} 4m$



- WACS/PION #5A
- $\Theta\gamma 11.0 - \Theta e 41.7 - D_{mag} 1.6m @ 4 \text{ or } 5.5 \text{ deg}$   
 $D_{calo} 11m$



# Hall Layout



# To do list

- Check detailed kinematics Hall C for September to December and January to March
- Check what is available in Hall C with Brad ( rack in hut and cables )
- Check if acceptable to install on HRS
- Not sure if we can fit Cerenkov easily
  - Can lucite and or scintillator behind calorimeter good enough for muon/pion ID
  - Not clear if we can calibrate easily with physics process
  - Need some gain monitoring system