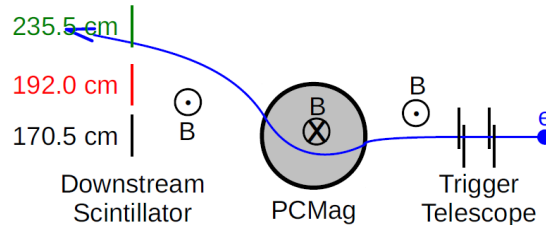


Common LCTPC Setup at the DESY II Testbeam

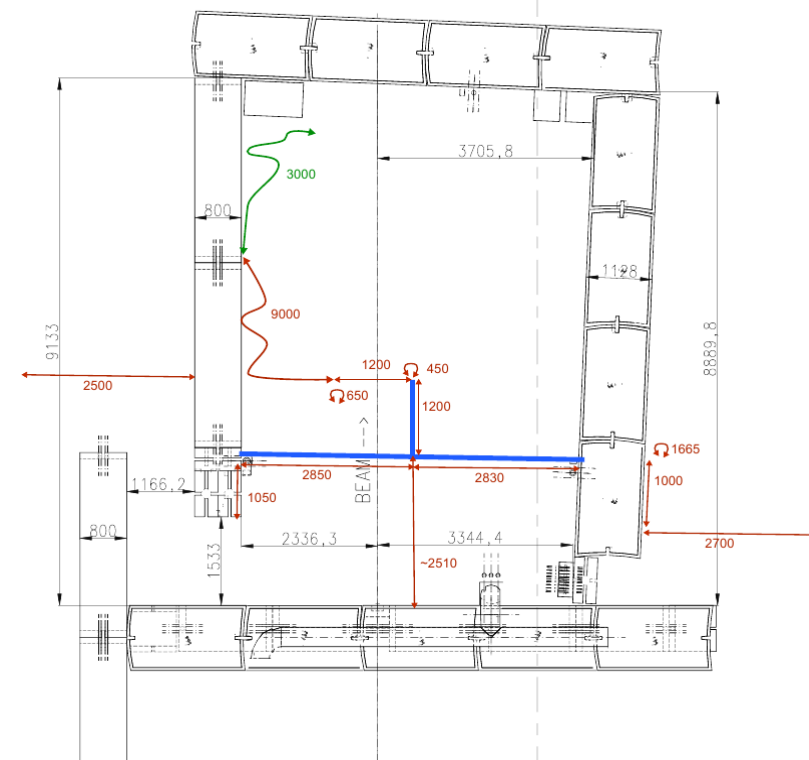
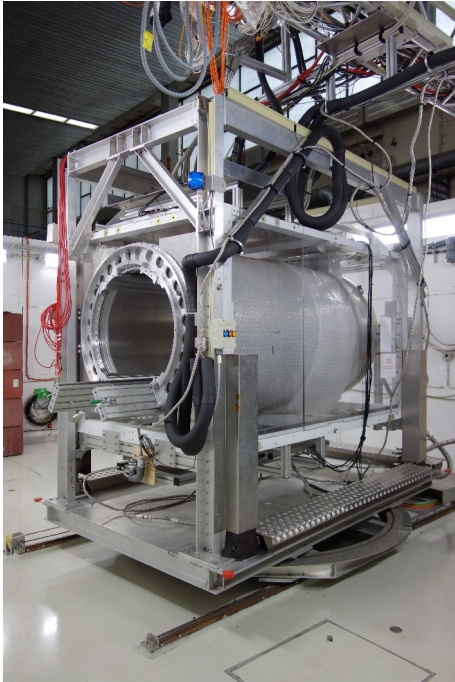


- Presentation contains repeats of things which were already presented in various workpackage meetings
- Tried to include all updates since the last presentation in a collaboration meeting (2014) + new developments

- General clean up and renovation of DESY II testbeam areas
 - Floor coating, walls painted, daylight lamps
- Used this to also clean up our setup
 - Removing unnecessary cables, arranging the rest properly
 - Replaced open shelf by lockable cabinet
 - New beamdump:
B field direction will be reversed
- Proper rack including powering/grounding for beam trigger
- New power and network sockets
(trigger, cameras, additional setups, warning signs at entrance)
- In progress
 - Alignment laser (hardware ready, aligning in progress)
 - Patch Panel for optical fibers (single + multimode)



- Movement of TRACI to T24 and re-routing of CO₂ lines finished
 - Successful test at Micromegas testbeam



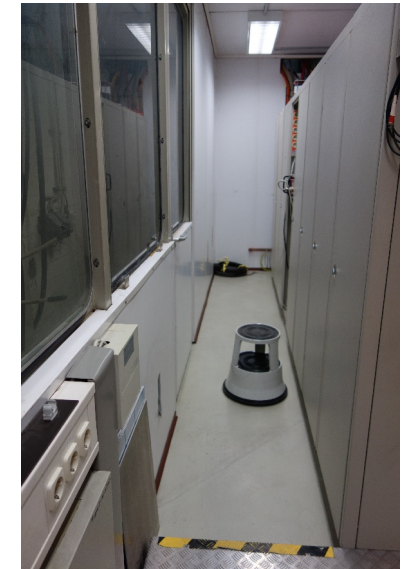
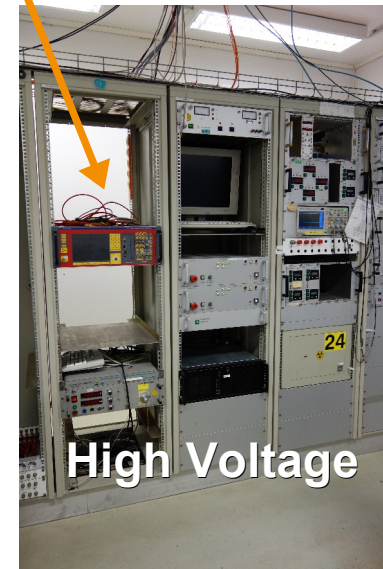
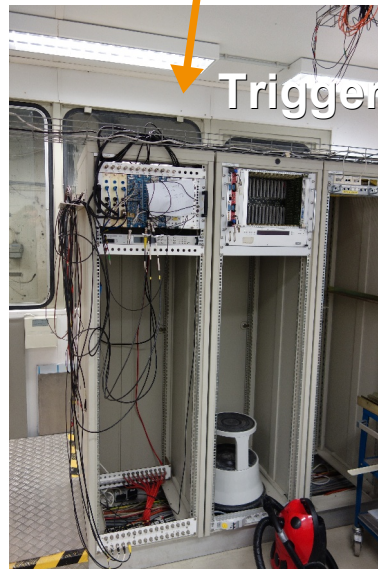
- Space frame endplate in principle ready to use
- Improved module mounting tool under development
- External silicon beam telescope → see Dimitra's presentation

Cleaning and Renovation - Hut T24

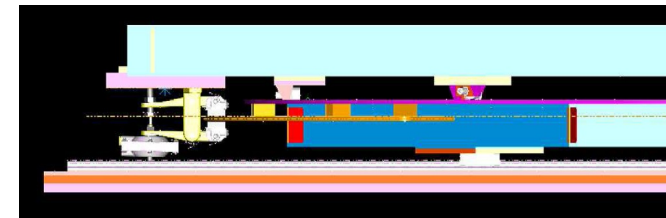
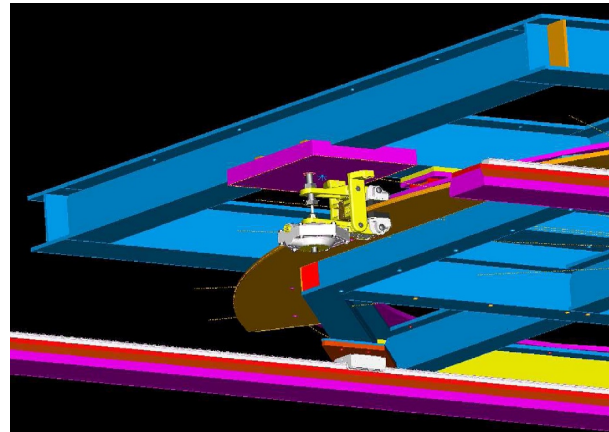


- Rearranging racks
- Cleaning up cabling
- General cleanup

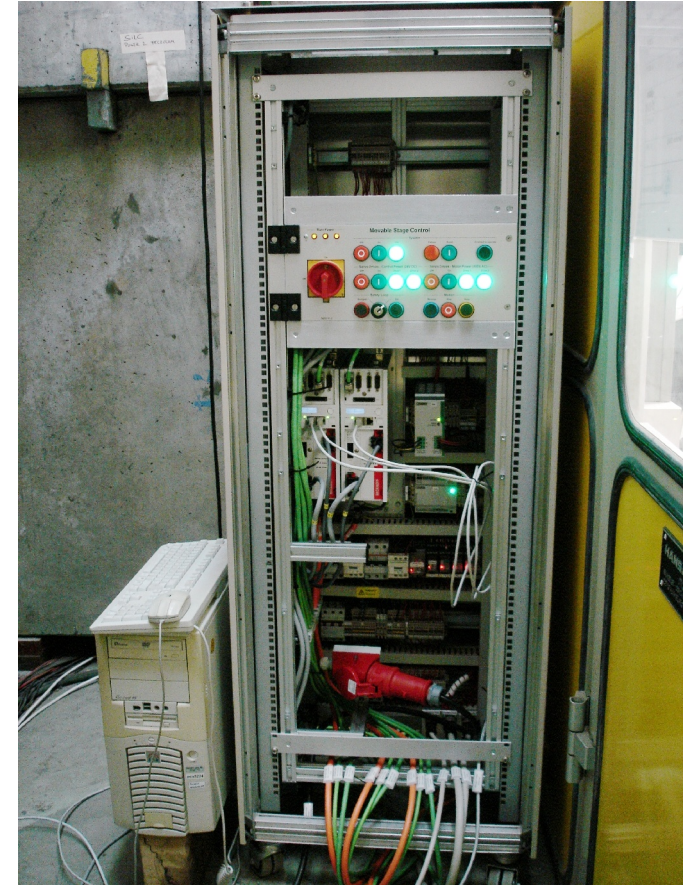
- In progress
 - Improving the permanent control area



- Noticed horizontal and rotational „ghost“ movement at certain positions when magnet is on
 - Measured force
 - Introduce mechanical breaks
 - Design ready for horizontal movement
 - Design for rotational movement in progress
- Idea to replace belt for horizontal movement by a spindle (as for the vertical movement)
 - More precision
 - No brake necessary
 - Details being investigated
- Stage positioning precision:
 - ~0.2mm horizontally
 - ~0.1mm vertically
 - ~0.1° in angle



- Final move to PLC not yet completely finished:
 - Program runs on PLC
 - Interface to be completed
- Inclusion of external hardware
 - Warning lamps etc.
 - Automatic steering of future stage brakes
- Several parts of code and settings improved
 - Overflow of position value being investigated (results in loss of absolute position after restart)
- Final test and calibration runs with finished version
- Inclusion of stage position values in DOOCS slow control system



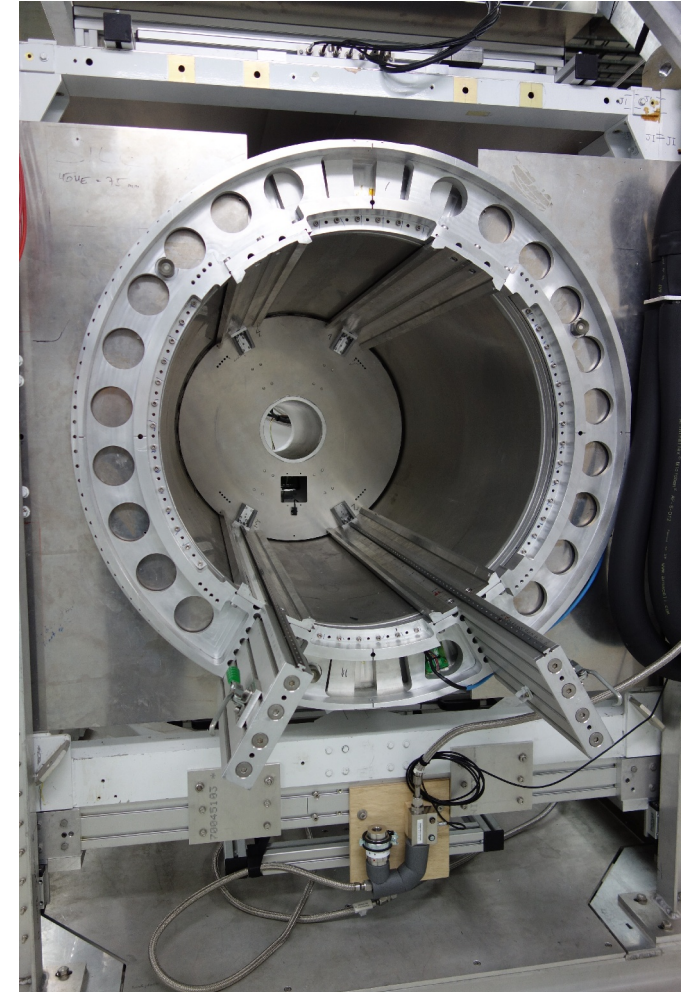
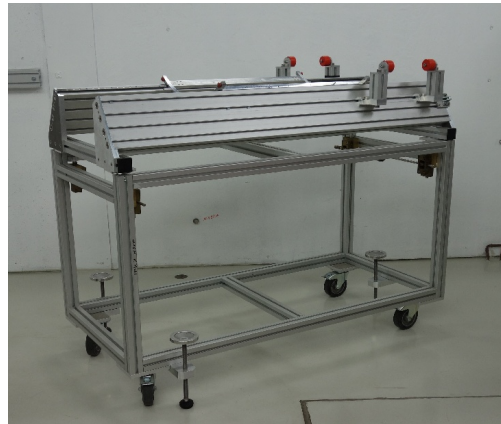
- New, more stable/precise mounting structure



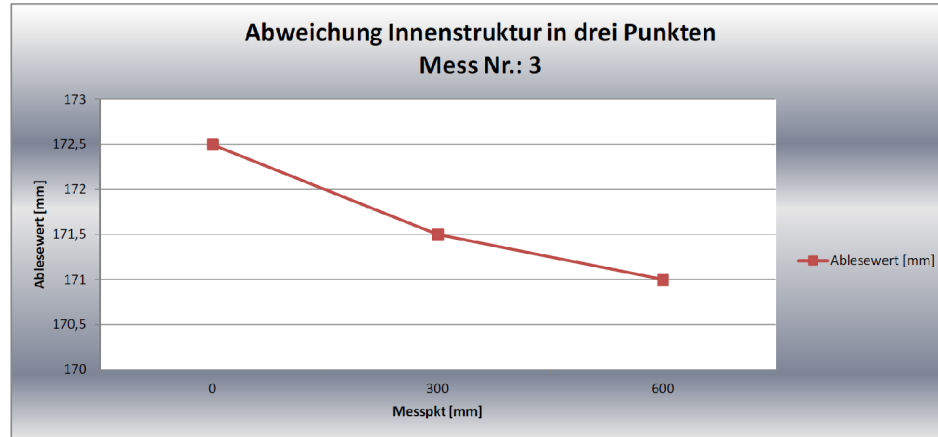
- Improved mounting cart

- Planned:

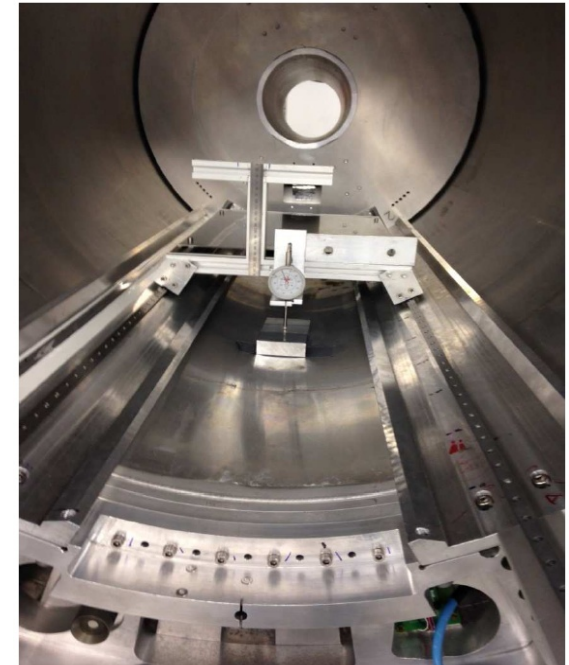
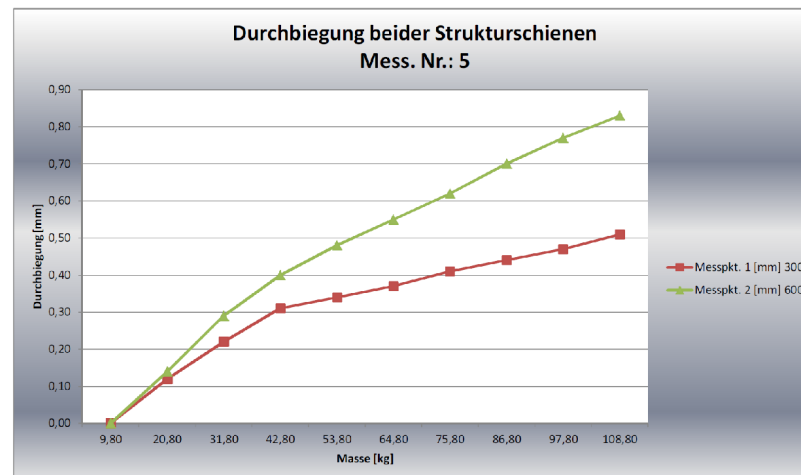
- New, more stable sled for large prototype
- Position measurement of TPC in PCMAG (horizontal + rotation)
- Support structure for external beam telescope



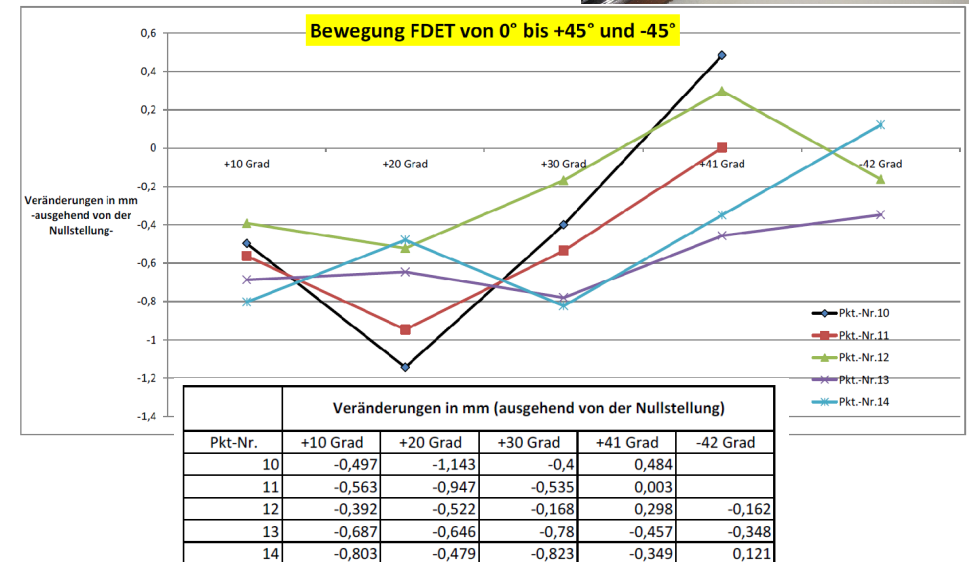
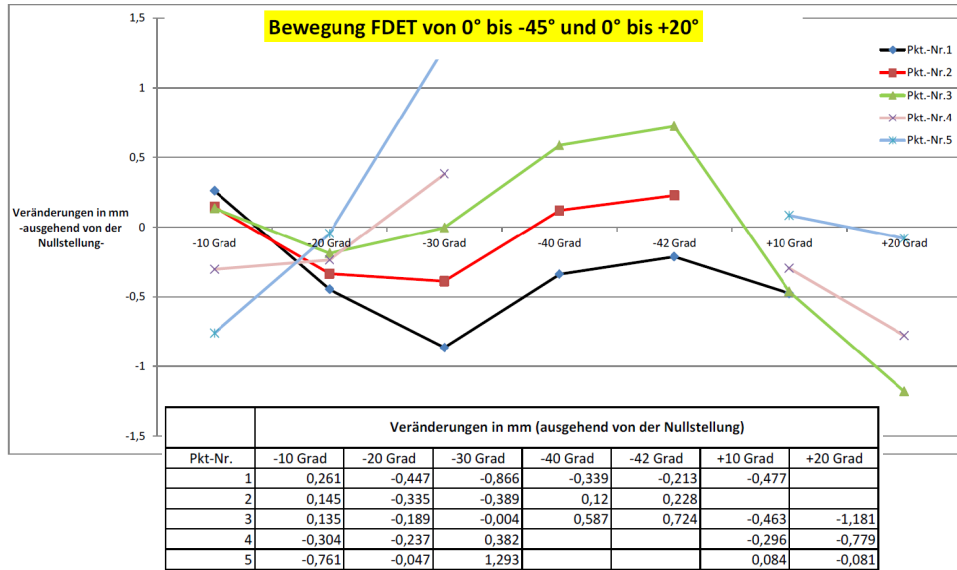
- Structure has been measured after installation
- PCMAG itself has a 0.058° slope in the stage
- Slope of the rails: $\sim 0.17^\circ$ (1.5mm/600mm)



- Bending under weight less than 1mm at $\sim 110\text{kg}$ (about LP incl. ALTRO rings)

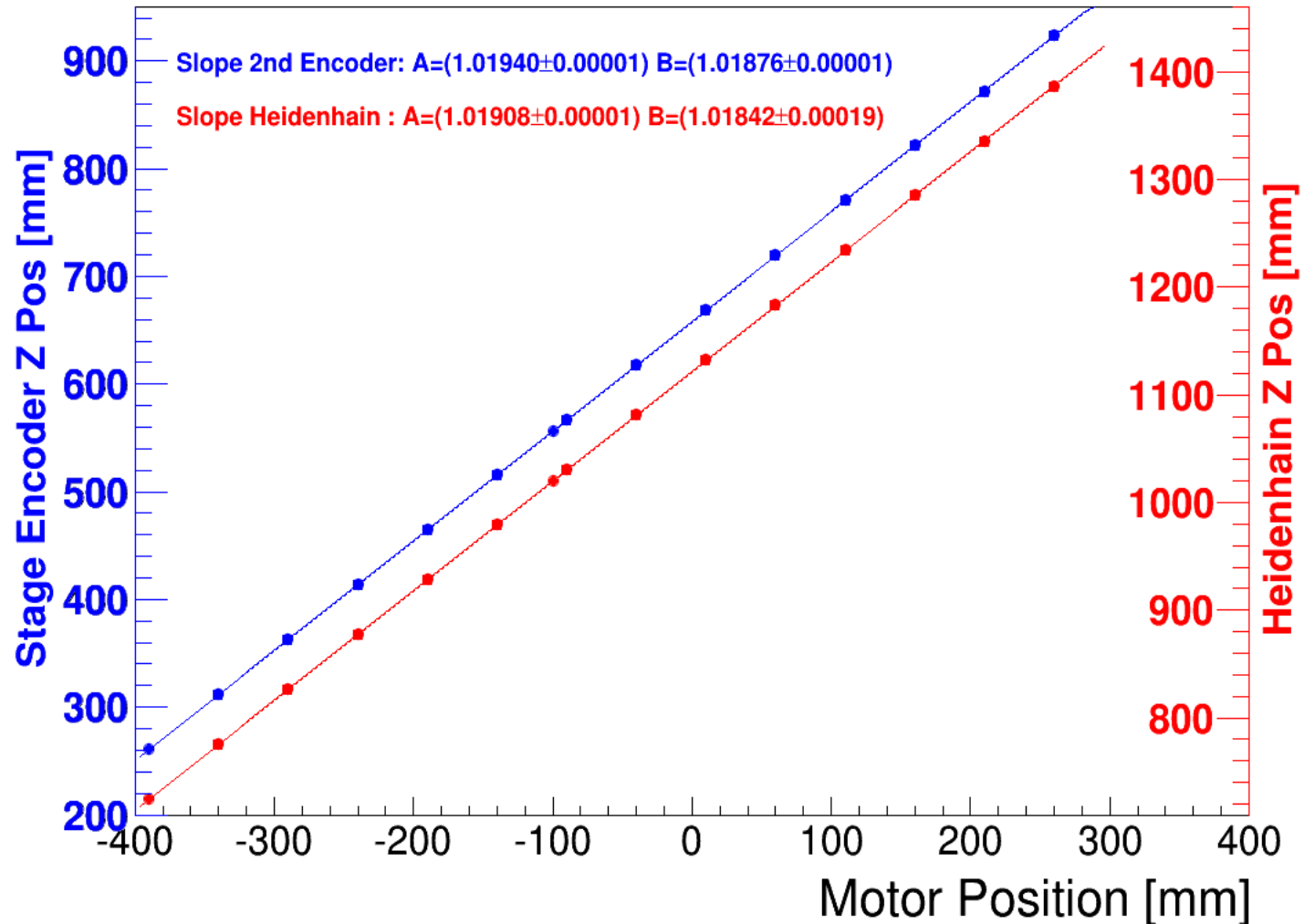


- During stage tests: Small jerks and up/down fluctuations during rotations
- Probable reason: not completely flat ring on which the 6 wheels run
- During rotation: survey group measured height change of reference points with laser system from 2 points in the area

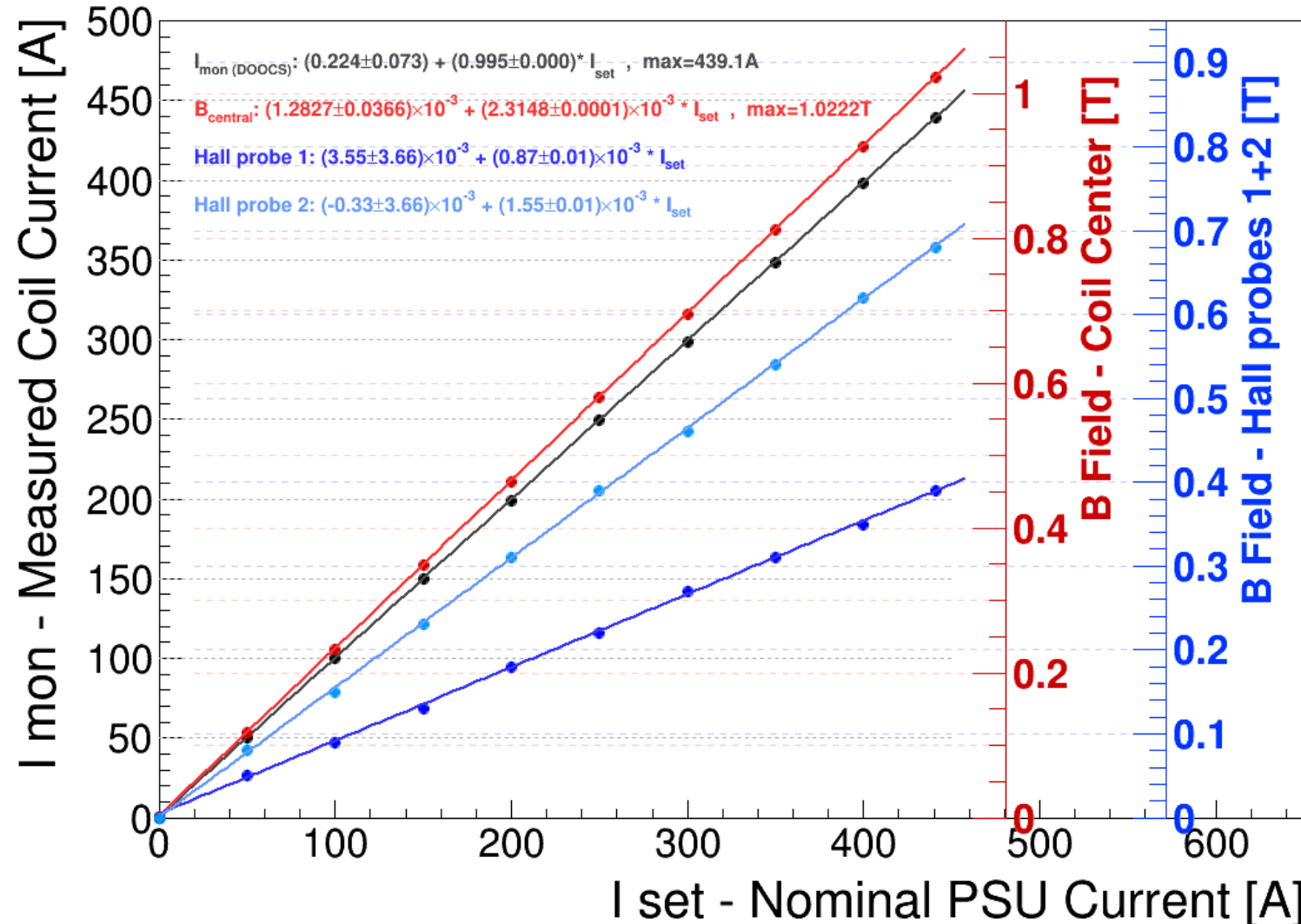


- During rotation of the stage, the vertical position varies up to a bit more than a millimeter
- Most measurements (points) stay below half a millimeter vertical deviation
- Probably no direct impact on our usual measurements (beam spread about 5 millimeter diameter)

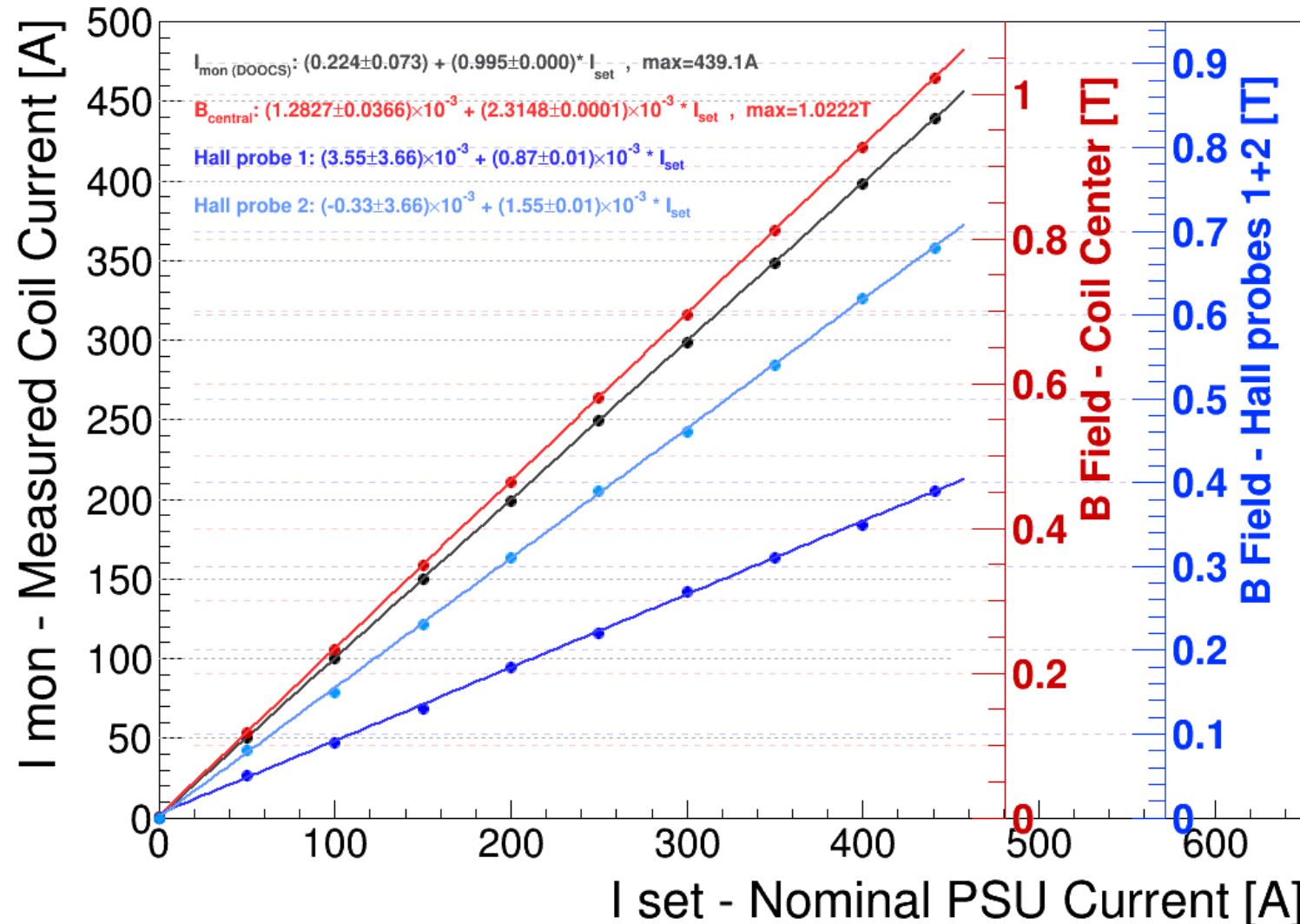
- We steer by and usually note the value of the motor encoder
- 2nd position encoder is mounted behind the gears at the stage
- Heidenhain is an independent, absolute measuring system
- Only one measurement run (more statistics needed?)
 - Moving in one direction and back
→ 2 curves (lines) for each encoder
- Calibration offset about 2%
→ direct impact on drift velocity results



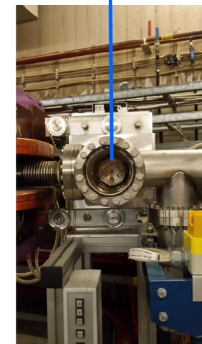
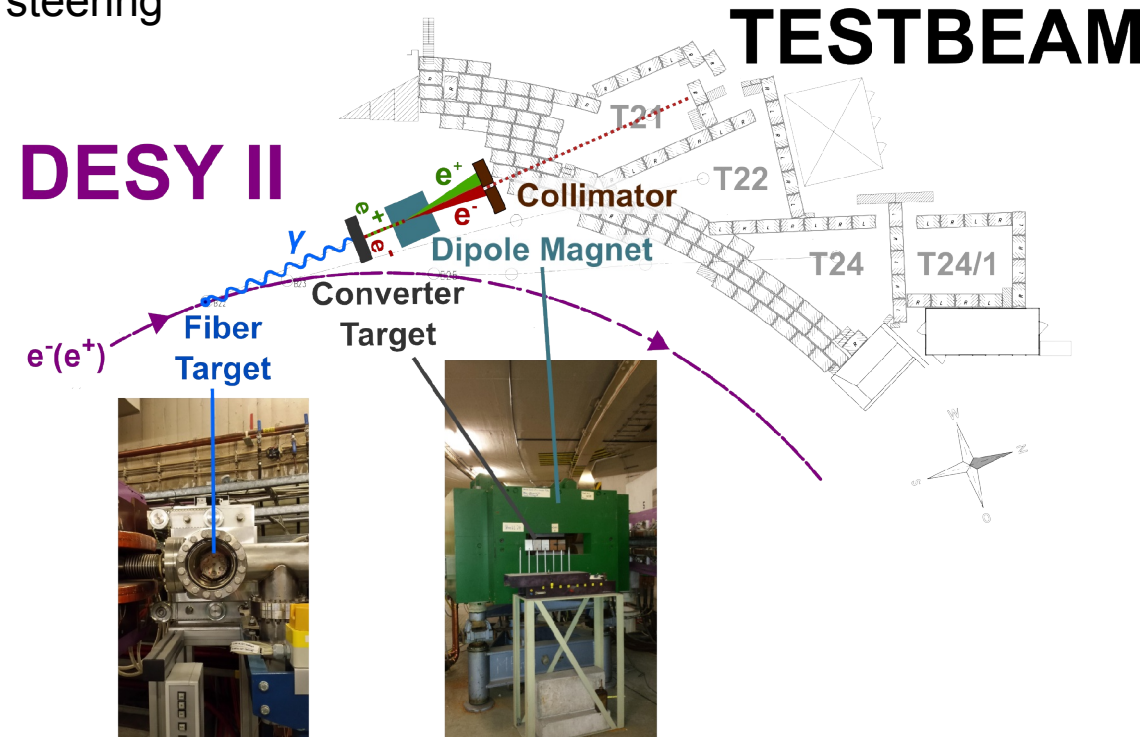
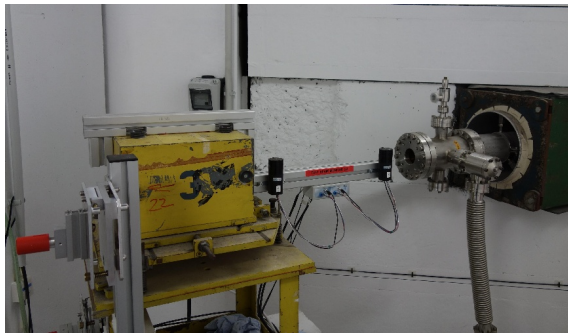
- Hall probe in PCMAG center
- Measurement:
 - Ramp up to 1T (441A), down in 50A steps
 - Up again in 100A steps (last to 441A)
- Value at PSU current settings from manual for 1T: 1.022 T
- Estimated errors:
 - Position of Hall probe: $\pm 5\text{mm}$
 - I coil $\pm 0.1\text{ A}$
 - B center $\pm 0.0002\text{ T}$
 - Hallprobes ± 0.005
- B Field vs Table Movement (only a few points checked):
 - Horizontal: $\leq \pm 0.0002\text{ T}$ (min-max = 1.02212 - 1.02236 T)
 - Rotation: $\leq \pm 0.0002\text{ T}$ (min-max = 1.02212 - 1.02242 T)



- Hall probe in PCMAG center
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- Improved software interfaces for beam (magnet) steering
- New beam fiber targets
 - Absolute position measurement (with Heidenhain system) in progress
 - Planned: current measurement through fiber to see if target fiber still intact
- Beam monitors (signal fed into machine control system)



- DACHS access system works (reminder: Indico registration before your testbeam time)
- New gas cabinets and gas safety system (in progress)
- Reminder: Acknowledgements in and notice to testbeam-coor@desy.de of publications based on testbeam data

- Rather busy in T24(/1) towards end of year
- Restart in 2017 - after Christmas break - might be some time in February (not decided yet)



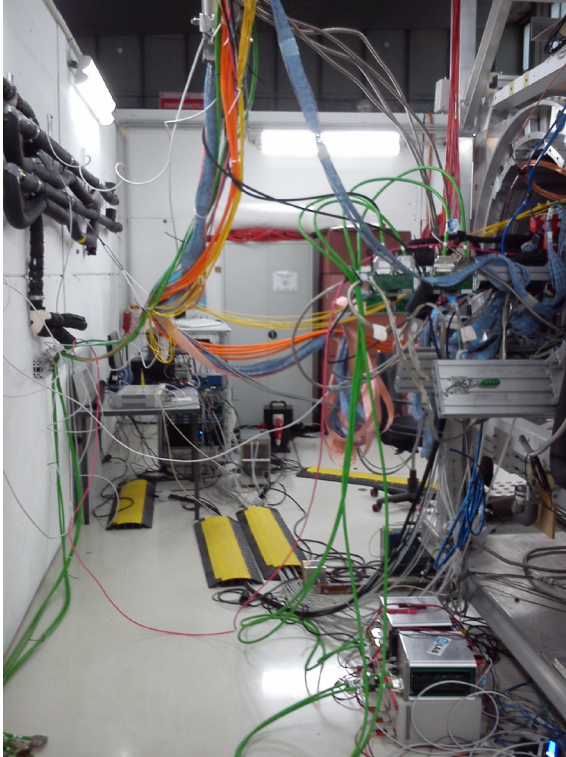
DESY Testbeam Schedule 2016 - Version 10 - 19/05/2016

Ralf Diener, Norbert Meyners, Marcel Stanitzki - DESY Test Beam Coordinators

Week	TB21		TB22		TB24/ 1		TB24	
	DATURA	none	DURANTA	none	Telescope in PCMAG	PCMAG	none	
4-Jan-16	1	Shutdown						
11-Jan-16	2							
18-Jan-16	3							
25-Jan-16	4							
1-Feb-16	5							
8-Feb-16	6							
15-Feb-16	7							
22-Feb-16	8							
29-Feb-16	9							
7-Mar-16	10							
14-Mar-16	11	Startup		Startup		Startup	Startup	
21-Mar-16	12	CMS-Pixel-Phase1		Mu3e				
28-Mar-16	13	Goettingen-CMOS		ATLAS-Pixel-AMSHB				
4-Apr-16	14	ATLAS-Pixel-MPP						
11-Apr-16	15	CMS-Pixel-Phase1				Belle-II		
18-Apr-16	16	FLUME		no telescope available				
25-Apr-16	17	FLUME						
2-May-16	18	CMS-Pixel-Phase1						
9-May-16	19	ATLAS-DMicromegas		CALICE-AHCAL			SIPM	
16-May-16	20			CALICE-AHCAL			SIPM	
23-May-16	21	ATLAS-Strip-Glue		ATLAS-ITK-Strip			CMS-Pixel-Phase1	
30-May-16	22	ATLAS-Strip-Glue		ATLAS-ITK-Strip			CMS-Pixel-Phase1	
6-Jun-16	23	CMS-Phase2-EPI					CMS-Pixel-Phase1	
13-Jun-16	24	CMS-Phase2-EPI					CMS-Pixel-Phase1	
20-Jun-16	25			CALICE-AHCAL			CMS-Pixel-Phase1	
27-Jun-16	26							
4-Jul-16	27	CMS-Pixel-PIL-KA		AIDA2020-Telescope				
11-Jul-16	28	CMS-Pixel-PIL-KA						
18-Jul-16	29	CMS-Pixel-Phase1						
25-Jul-16	30	CMS-Pixel-Phase1		ATLAS-Strip-Glue				
1-Aug-16	31	Summer Students		ATLAS-Strip-Glue				
8-Aug-16	32							
15-Aug-16	33							
22-Aug-16	34	FCAL						
29-Aug-16	35						CBM-TRD	
5-Sep-16	36						CBM-TRD	
12-Sep-16	37					LCTPC-FLC		
19-Sep-16	38					LCTPC-FLC		
26-Sep-16	39					LCTPC-FLC		
3-Oct-16	40							
10-Oct-16	41						PANDA-DIRC	
17-Oct-16	42	CMS-Phase2-EPI					PANDA-DIRC	
24-Oct-16	43	CMS-Phase2-EPI		HEP for Teachers			PANDA-DIRC	
31-Oct-16	44					LCTPC-japan		
7-Nov-16	45			Mu3e		LCTPC-japan		
14-Nov-16	46							
21-Nov-16	47					ATLAS-ITK-Strip		
28-Nov-16	48					ATLAS-ITK-Strip		
5-Dec-16	49			no telescope available		Belle-II		
12-Dec-16	50							
19-Dec-16	51							
26-Dec-16	52					Shutdown		

Announced





➤ We are not the only users of this area:

- Bring/use proper boxes for leaving equipment on site
- Label equipment staying on site

