

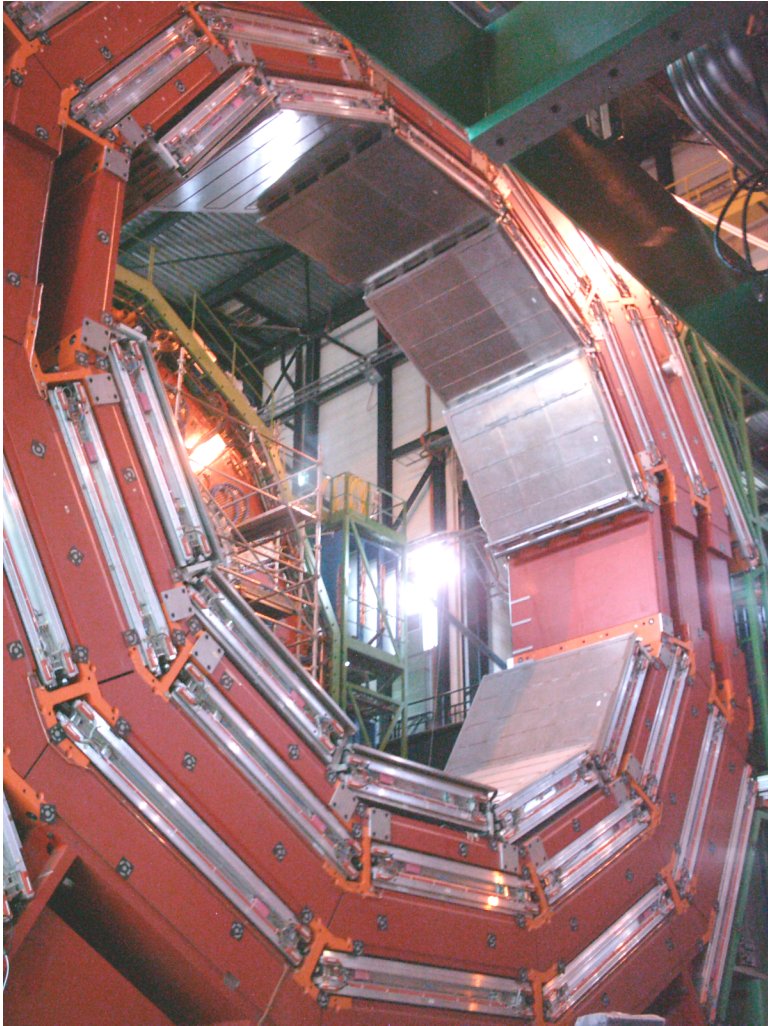
Installation and SX5 Activities Update and Plans

A. Benvenuti
INFN Bologna

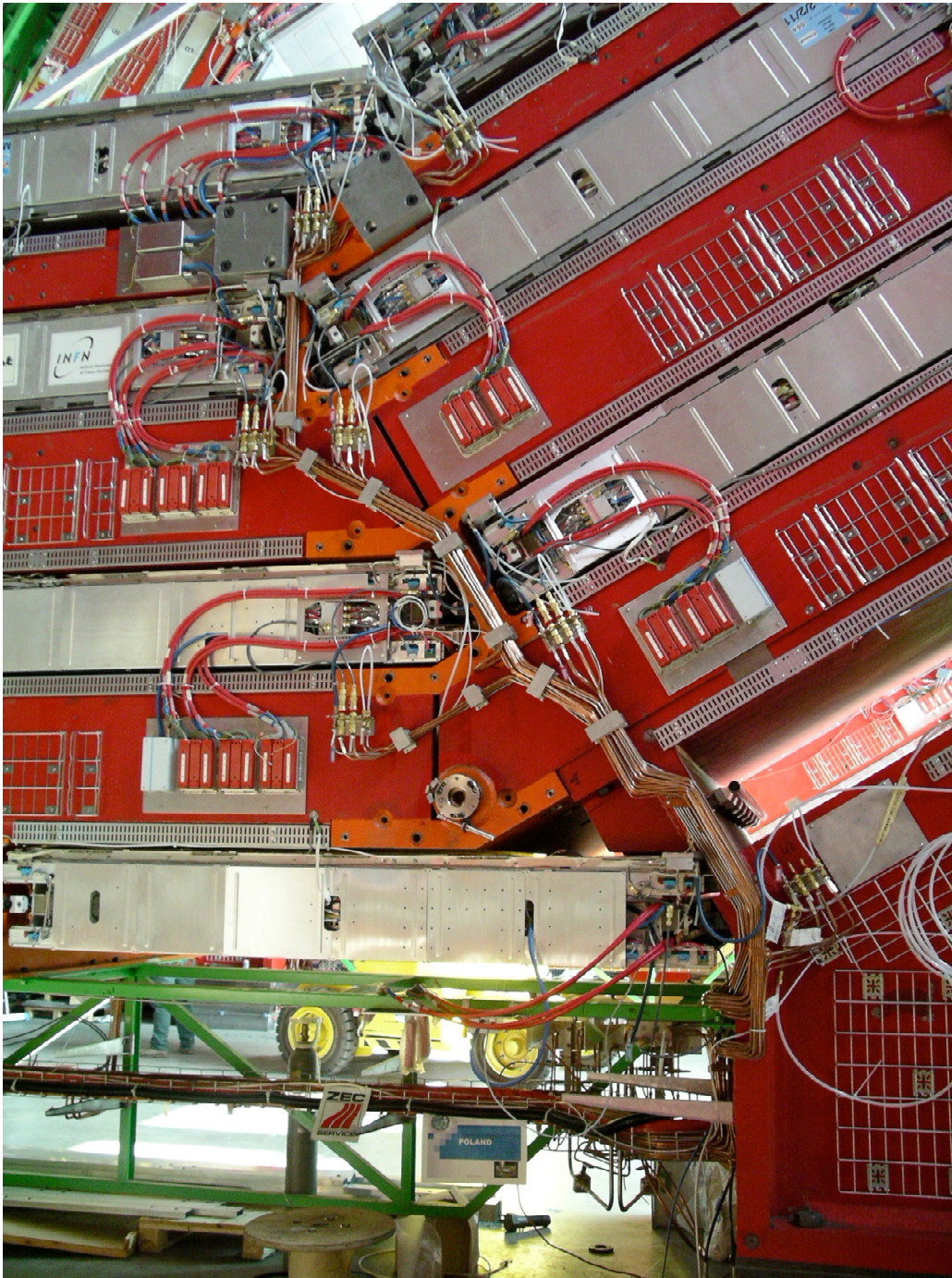
CMS week,
CERN

September 20th 2005

YB+2 Status



- Chamber Installation Completed
- Commissioning Completed
- Chambers connected to the gas distribution rack (parallel flow)
- Chambers in S10 and S11 are closed (outside gas flow) the remaining chambers have been hibernated: discharged for over 12 hours, disconnected from HV and are now under CO₂.
- Chambers z-positioning completed
- Photogrammetry done on front-end and HV side
- Grounding connections added to all MC

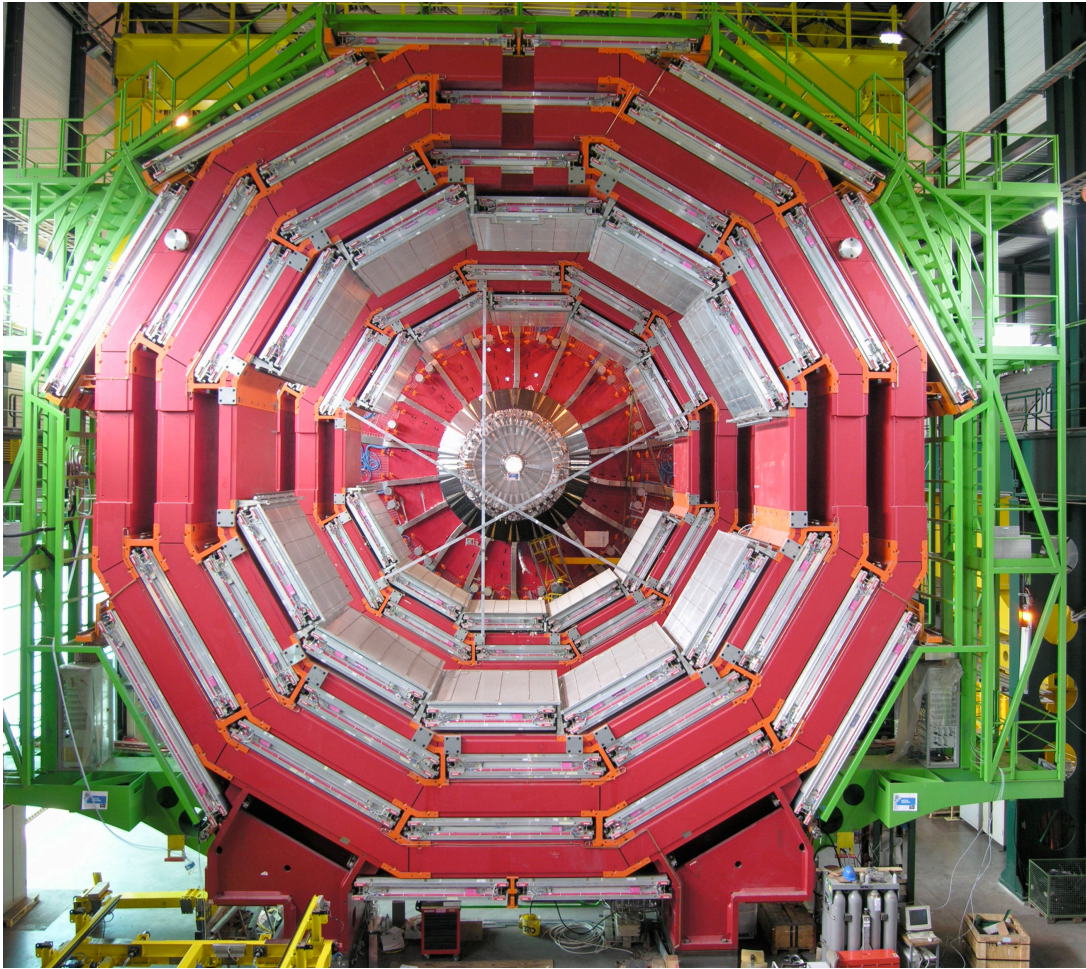


YB+2 Status

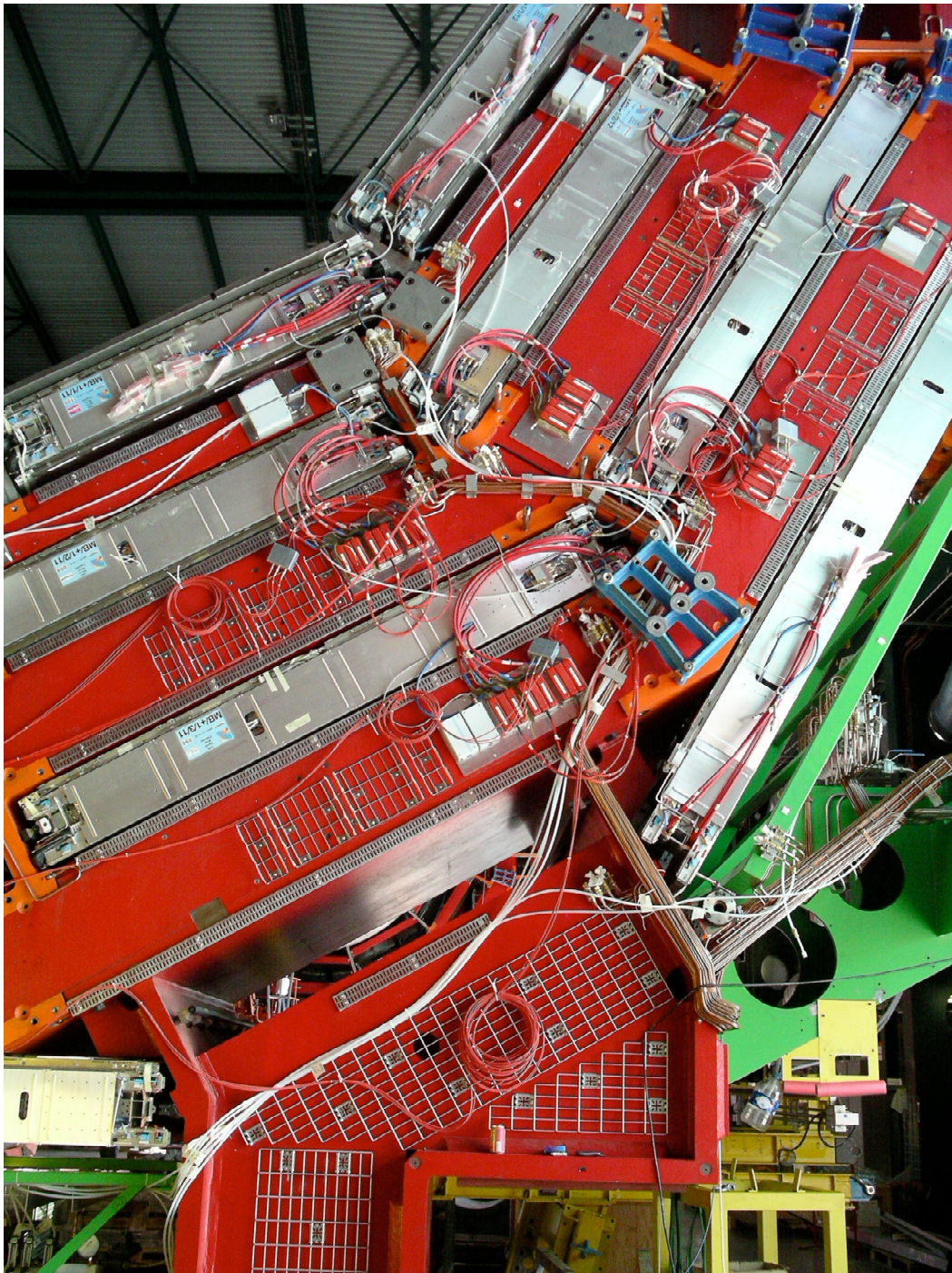
- Tidying up of cabling done in S8 to S12
- Tidying up of top sectors ~2 days /2 people (started)
- All mechanical parts required for cabling are in place but **racks are still naked**
- Cabling started with serial DCS cables

⇒ YB+2 Ready for Cabling

YB+1 Status



- Chamber installation completed on 16/09/05
- 9 MB4 chambers installed from 13/09 with crane access only from 13:00 to 21:00
- Two chambers failed the pre-installation tests:
 - MC test (MB4/4)
 - HV test (MB4/10), strip probboth chambers were installed since they are in easy spots



YB+1 Status

- All chambers apart for MB4 are under gas flow and cooling
 - Flex rails and radial cable trays are installed
 - HV PP and LV patch connectors are installed
 - Connections to HV PP done for MB2 and MB3
 - Connections to LV PC and remaining HV PP to be done this week
 - Ground straps from SB to be done this week
 - MB2, MB3 in S8 to S12 connected to the HV
- ⇒ ~Ready for Commissioning

YB+0 Status



2 chambers/ day feasible with 6 people and the crane full time

- Welding of cryostat flanges considered too risky for the chambers integrity
 - Installation postponed (at last minute) until November
 - Installation tests under the cryostat carried out in August
 - Lifting platform too high for feet chamber installation some parts to be modified.
 - Rails for platform to be reinforced
- => Installation under the cryostat is difficult

YB+2 Chambers Interventions

- MB3C10 installed in S09 had an unrecoverable wire to cathode discharge and a problem in the Theta SL F-end (MC). The chamber was brought back to the ISR, HVBs replaced, problems fixed and installed in YB+1
- MB4C01 (To) failed the pre-installation test (strip discharge) was brought back to ISR and repaired. It is installed in YB+2 S02
- After several weeks under HV two chambers in S03 (MB2C47 and MB3C30) had a HV trip within few hours. MB3C30 failed to recover. Problem was located to PHI1 A connector but it disappeared in the process of identifying the pin connected to the problem spot. The chamber was under HV for another 2 weeks without problems and was commissioned.
- From the HV monitoring plots it appears that 3 MB2s, 1MB3 and 1MB4/4 have worrisome discharges wire to strips, wire to cathodes or both

YB+1 Vagaries

- 3MB3 and 3MB2, in the bottom sectors, were connected to the HV on September 12th
- 2 Chambers failed to reach nominal HV values with “cold ramp-up”
- 1 Chamber had an unrecoverable HV trip during the night
- Trying to locate the problem spot in one chamber it appeared that all SLs were discharging
 - ==> suspect gas mixture problem HV turned OFF
- In the absence of our gas experts (Gerd, Paolo) I got help from A. Lyonnet. Most probably the gas mixture was bad due to a pinched tube on the Ar line with the mass flow meters set with Ar as master.
- The gas flow was stopped on Wednesday and the mass flow meters were brought to CERN for calibration
- Gas mix problem could be intermittent, maybe this is what caused the HV problems in YB+2 (same sector as was for the first 2 chambers in YB+1)

Commissioning

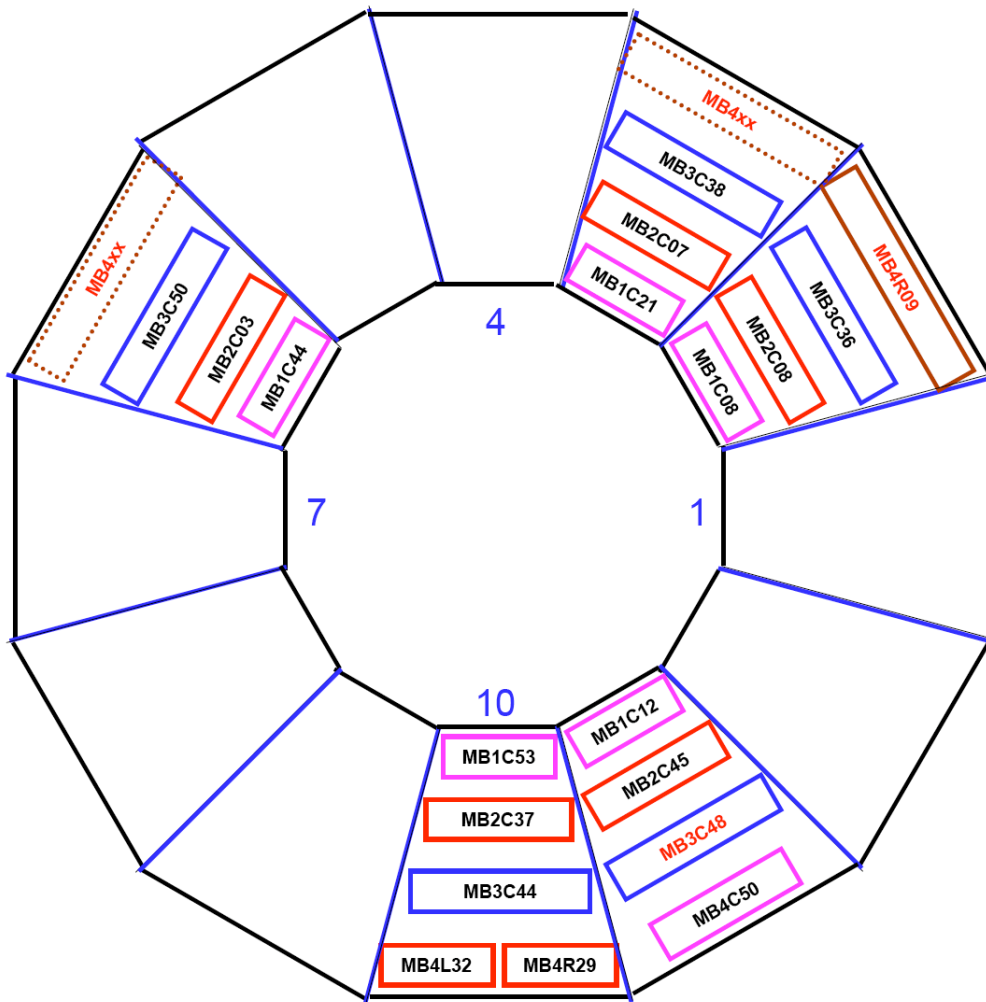
- Many tasks both for RPCs DTs and HO require access to the detector and the usage of the lifting platforms
- Define “prime users” and “parasitic” access, if necessary, in half day shifts
- Commissioning of YB+2 left chambers in disarray with carters and LV patch connector covers all over the place
- This must not happen on YB+1. The shifters are responsible for leaving the chambers in a proper state
- This applies also to the lifting platform
- Work on YB+1 chambers should be completed this week. The connections of the MB4s to patch panels/connectors next week
- YB+1 commissioning should resume next week

Cabling

- The cabling of S10 is ready to start
- The cabling sequence is organized by Fabio and Martin
- Connections to the MC is our responsibility
- In my opinion the cabling should be limited to S10 until the racks are equipped with cooling, power and ventilation. One wheel requires ~ one week once the final rack layouts are available
- Checking the connections to the MC with a functionality test requires a test station, power supply and jumper cables and fibers. Franco is taking care of this part.
- It is time to organize teams (from the commissioning?) for this task

Installation Schedule (Revised)

YB+0

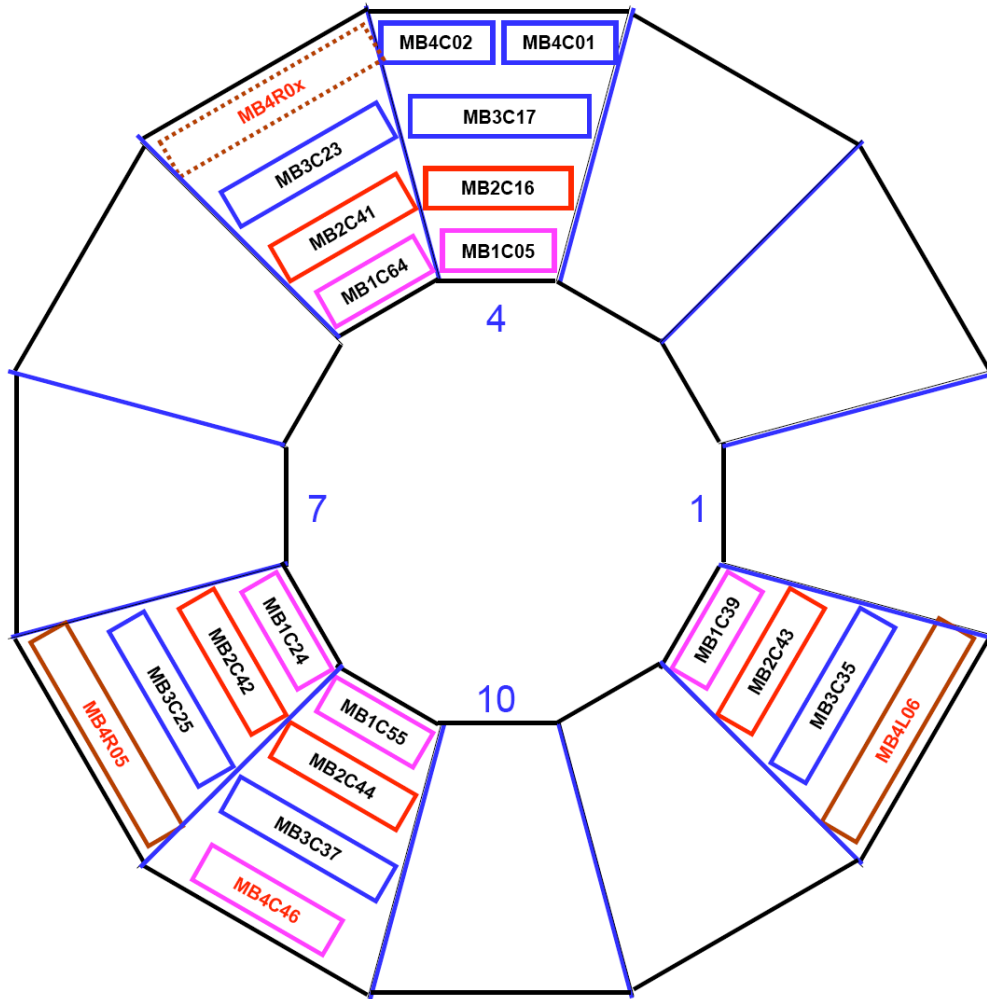


- All DTs at ISR apart for 2MB4 due to arrive in ~2 weeks
- RPCs all built, 5 still in Bari
- S10,S11 ~ready (2 chambers to couple with RPCs)
- Mounting all chambers on YB+0 allows to position the interface pieces once
- Installation time required 2 weeks (20 chambers) with adequate manpower and priority access to the crane

==> start mid November ?

Installation Schedule (Revised)

YB-0



➤ Install Sectors 8,9, 12

- All chambers at ISR
- Installation time required 1 weeks (11 chambers) with adequate manpower and priority access to the crane

➤ In case of delays or scheduling problems priority is given to complete the installation under the vacuum tank

Installation 2005 Summary

Activity Name	Start Date	Finish Date	Jun 05					Jul 05					Aug 05				Sept 05						
			29	5	12	19	26	3	10	17	24	31	7	14	21	28	4	11	18	25			
YB+1 Installation 15 Chambers + 1	5/31/05	6/14/05																					
YB+1 YB+2 Installation 12 Chambers 4 MB4 (YB+2) 8 in YB+1	6/27/05	7/6/05																					
YB+1 YB+2 Installation 7 Chambers 2 in YB+2 5 in YB+1	7/13/05	7/14/05																					
YB+1 YB+2 Installation 4 Chambers 1 in YB+2 3 in YB+1	8/2/05	8/2/05																					
YB0 Installation Tests	8/10/05	8/12/05																					
YB+1 Completed 9 Chambers => 47+1	9/13/05	9/16/05																					
YB0 Bottom , YB0+ Top 26 Chambers 31	11/21/05	12/9/05																					
S10, S11 in YB-1, YB-2 16 to 22 Chambers	1/16/06	2/3/06																					

- YB0 installation is conditioned by the completion of the welding task that will take ~ 1 month
- I was promised 3 weeks access but, in case of delays, we must be ready to cope with a shorter period

BMU SX5 and UX5 Installation and Cabling Schedule

Activity Name	Start Date	Finish Date	Jun 06			Jul 06				Aug 06				Sept 06				Oct 06				Nov 06				Dec 06				Jan 07				
			4	11	18	25	2	9	16	23	30	6	13	20	27	3	10	17	24	1	8	15	22	29	5	12	19	26	3	10	17	24	31	7
YB0 Installation Sectors +2,3, 6, - 4,5 (21Chambers) + 2 MB4/9-11	6/19/06 8/28/06	6/30/06 9/1/06 9/13/05				◀▶								◀▶																				
YB0 Connections HV, LV, Cooling	7/3/06	7/21/06				▨																												
YB0 Fast Commissioning (21 DT)	7/24/06	8/4/06				●◐																												
YB0 Cabling	8/7/06	10/4/06								◀◊▶																								
UX YB+2, YB+1 Sectors 1,7 (16 Chambers)	7/24/06	8/11/06				◀▶																												
UX YB+ 2,+1 Connections HV, LV, Cooling	7/31/06	8/16/06				▨																												
UX YB+ 2,+1 Functionality Test	8/3/06	8/18/06				◐▨																												
UX YB+2 , +1 Cabling	8/21/06	9/1/06								◊▨◊																								
YB-1 Installation , 8 sectors (32 +2 chambers)	8/21/06 10/30/06	9/8/06 11/3/06								◀▶								◀▶																
YB-1 Connections HV, LV, Cooling	9/11/06	9/29/06								▨																								
YB-1 Fast Commissioning	9/21/06	10/6/06								●◐																								
YB-1 Cabling	10/9/06	11/10/06												◀◊▶																				
UX5 YB0 Installation and Cabling...	10/16/06	11/17/06												▶▨◀																				
YB-2 Installation , 8 sectors (32 +2)	9/18/06 11/27/06	10/6/06 12/1/06								◀▶								◀▶																
YB-2 Connections HV, LV, Cooling	10/9/06	10/27/06												▨																				
YB-2 Fast Commissioning	10/23/06	11/10/06												●◐																				
YB-2 Cabling	11/13/06	12/8/06																◀◊▶																
UX5 YB-1,YB-2 Installation and Cabling...	12/11/06	2/2/07																				▶▨◀												

➤ Schedule shifted by 3 months with respect to June presentation

Summary

- Chamber installation in YB+2 and YB+1 is completed
- YB+2 is ready for cabling
- YB+1 is ~ ready for commissioning
- YB+2 Cabling (and testing) is now the major hurdle
- Commissioning remains a critical item. YB+1 must be commissioned by the middle of November or it will delay cabling.
- More physicists are needed for these tasks
- Installation of 8 sectors in YB0 is feasible provided we are given access for 3 weeks (the ISR team does not jump ship) and adequate resources (2 installation teams in case of shorter access time)
- The HVB crisis is over, the last batch has been shipped from IHEP. In retrospect, this did not limit the number of installable chambers which is paced by the work on YB0.