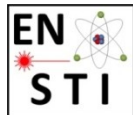


Report from the MCWG, 5th R2E Project Meeting



M. Calviani on behalf of the MCWG ([link](#)),
EN/STI

News on the weekly report

- Weekly reports distributed through the RadWG:
http://radwg.web.cern.ch/RadWG/Pages/Radiation_levels/Weekly_report.htm
- Review of R factor for tunnel location (measurement in the UJ13 → R=0.4)
- Offset corrected BLM data are now available and provided by BE/BI/BL (A. Nordt) every week → integrated with the weekly report

Radiation levels in the LHC (R2E-related)						
Week 20 (16.05.2011 00:00h - 22.05.2011 23:59h)						
Comments:	<ul style="list-style-type: none"> - Locations with cumulated fluences <1E6 HEH/cm2 are those where the RadMons counts (@5V & @3V) are statistically not relevant - RadMon readings in shielded areas are <u>strongly</u> affected by the thermal neutron component - If more than one detector exists for an area, the highest level is taken into consideration - BLM dose assumes a constant offset of 2E-7 Gy/s - W20: physics week. Ramp up in bunch number, from 480 bunches up to 912 bunches (Sunday) with 108 bunches/train. Record integrated luminosity in 24hours (Sunday) - 33.3 pb-1. Record instantaneous lumi >1E33 Hz/cm2. - UJ14/16 show highest values for shielded areas, collimation control failures observed 					
Uncertainties:	Tunnel locations - factor of 2x Shielded areas - factor of 3x					
Lumi	ATLAS (μb^{-1}) 86.1	ATLAS (peak) ($\text{Hz} \cdot \mu\text{b}^{-1}$) 1248.5	CMS (μb^{-1}) 87.4	CMS (peak) ($\text{Hz} \cdot \mu\text{b}^{-1}$) 942.1	ALICE (μb^{-1}) 0.0	LHCb(μb^{-1}) 32.8

News on the weekly report

RRs	shielded areas		tunnel		
	HEH (cm-2/w20)	HEH (cm-2/2011)	HEH (cm-2/w17)	HEH (cm-2/2011)	BLM dose (mGy/week)
13	<1.0E+6	<1.0E+6	6.9E+06	3.5E+07	109
17	<1.0E+6	<1.0E+6	3.5E+06	3.1E+07	54
53	<1.0E+6	<1.0E+6	8.6E+06	2.8E+07	61
57	<1.0E+6	<1.0E+6	1.0E+07	3.6E+07	43
73	<1.0E+6	<1.0E+6	<1.0E+6	<1.0E+6	238
77	<1.0E+6	<1.0E+6	5.2E+06	2.9E+07	59
UJs	shielded areas		tunnel		
	HEH (cm-2/w20)	HEH (cm-2/2011)	HEH (cm-2/w17)	HEH (cm-2/2011)	BLM dose (mGy/week)
14 (13, tun)	3.4E+06	1.5E+07	2.5E+09	1.0E+10	6532
16 (17, tun)	2.5E+06	1.1E+07	2.8E+09	1.3E+10	11939
22	N/A	N/A	1.5E+08	5.9E+08	207
23	<1.0E+6	<1.0E+6	1.0E+07	5.2E+07	23
32	N/A	N/A	<1.0E+6	<1.0E+6	28
33	<1.0E+6	<1.0E+6	<1.0E+6	<1.0E+6	N/A
56	<1.0E+6	4.0E+06	9.8E+08	4.3E+09	453
76	<1.0E+6	<1.0E+6	5.3E+08	2.9E+09	5527
87	<1.0E+6	<1.0E+6	2.7E+08	8.0E+08	<10
88	N/A	N/A	4.8E+07	4.5E+08	<10

prior. 1

prior. 2

- The present highest loaded shielding areas are the **UJ14/16** (ATLAS lumi driven) where several equipment already failed (collimators, CRYO, biometry...) and for which relocation is under study → [link](#)
- Inverted asymmetry (!) between the UJ13/17 and UJ14/16 → shielding?
- The next priority point is the **UJ56** (fluence less by factor of 2x)

News on the weekly report

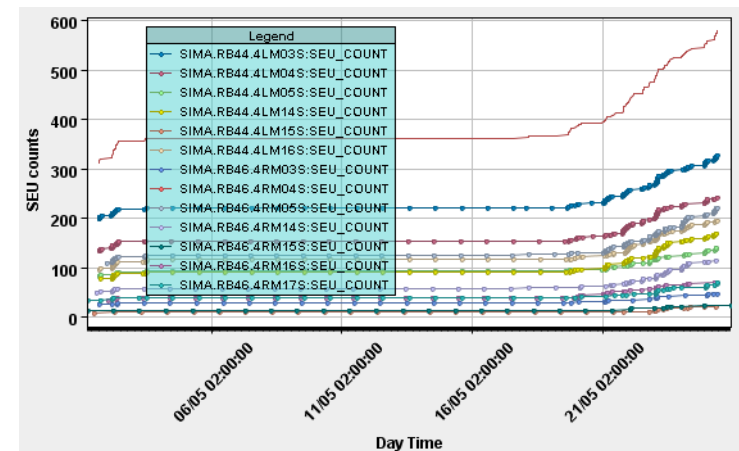
US85/UX85	cavern US85		cavern UX85	
	HEH (cm-2/w20)	HEH (cm-2/2011)	HEH (cm-2/w17)	HEH (cm-2/2011)
	1.1E+06	4.4E+06	8.7E+06	3.7E+07

PLC failures links in **US85** →

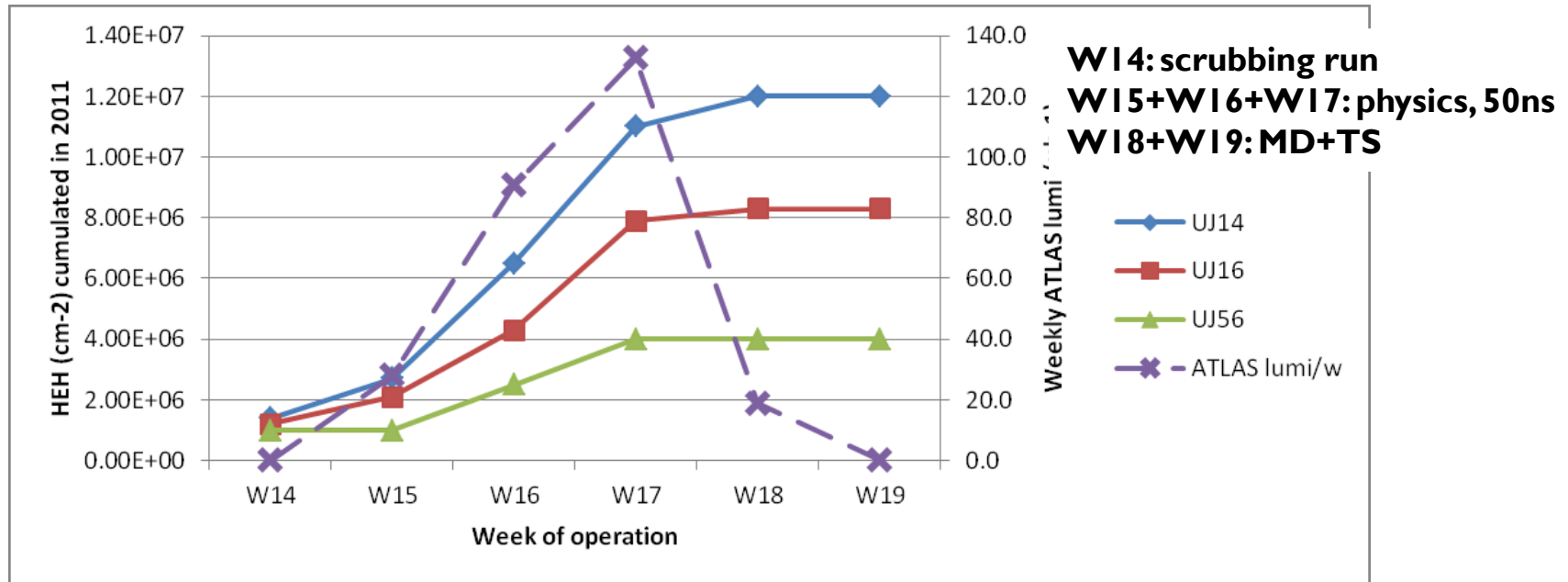
- In ~1 month we got $\sim 1-2 \cdot 10^6$ cm⁻² HEH, sufficient for failure of another device? → test in H4IRRAD to point out whether is radiation or not!
- Up to know (cumulated 2011 operation) is $\sim 5-6 \cdot 10^6$ cm⁻²/2011

	tunnel			shielded areas	
	HEH (cm-2/w17)	HEH (cm-2/2011)	BLM dose (mGy/week)	HEH (cm-2/w20)	HEH (cm-2/2011)
RB44/46	2.1E+08	8.3E+08	N/A	N/A	N/A

P4 and **P6** LSS are also presenting signs of significant beam-gas interaction (vacuum increase/e-cloud)! → radiation effects on the arc detectors? ([link](#))



News on the weekly report



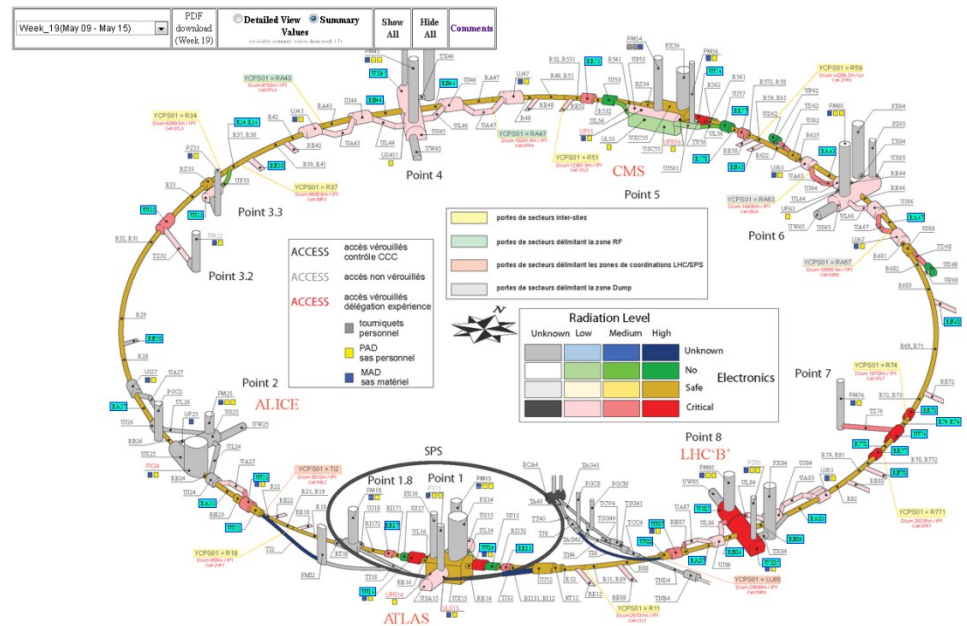
■ TODO list:

- Summing up all the location for which we know the R factor
- Automatic time evolution of radiation levels
- Update of the graphical representation of radiation levels
- Beam intensity in the weekly report
- Calibration of RadMons → effect of RadMon orientation in the radiation field evaluation for shielded areas!

Updated version of the graphical monitoring tool

- According to the feedback of the last MCWG Hong Jun have created two versions of the graphical weekly report representation, using two different layout drawings

G:/Projects/R2E/Monitoring/Hongjun/2_Weekly%20Report%2025102010_Test3.html



G:/Projects/R2E/Monitoring/Hongjun/Weekly Report 25102010_version2.html

LHC-MD for R2E

July

Wk	26	27	28	29	30
Mo	27	4	11	18	2
Tu					
We		TS			
Th					
Fr	MD				
Sa					
Su					

- TS#3 have been shifted forward by 2 weeks!
- Most probably the R2E MD will be performed between the 29th June and 3rd July

- An updated version of the request taking into account the updated objective of the test have been uploaded https://espace.cern.ch/lhc-md/Shared%20Documents/2011%20MD%20Requests/LHC-MD-REQUEST_R2E_tests_v2.doc
- We have discussed with BE/OP on the details beam parameters for the test
 - An **accurate planning of the test** is needed → TODO list!

LHC beam tests cell I4R2 – installed configuration

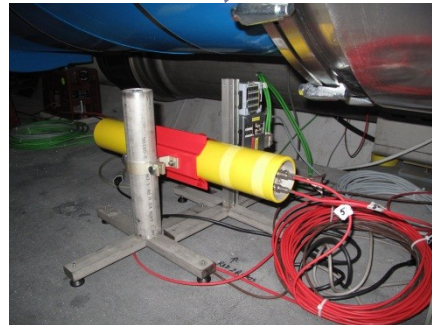
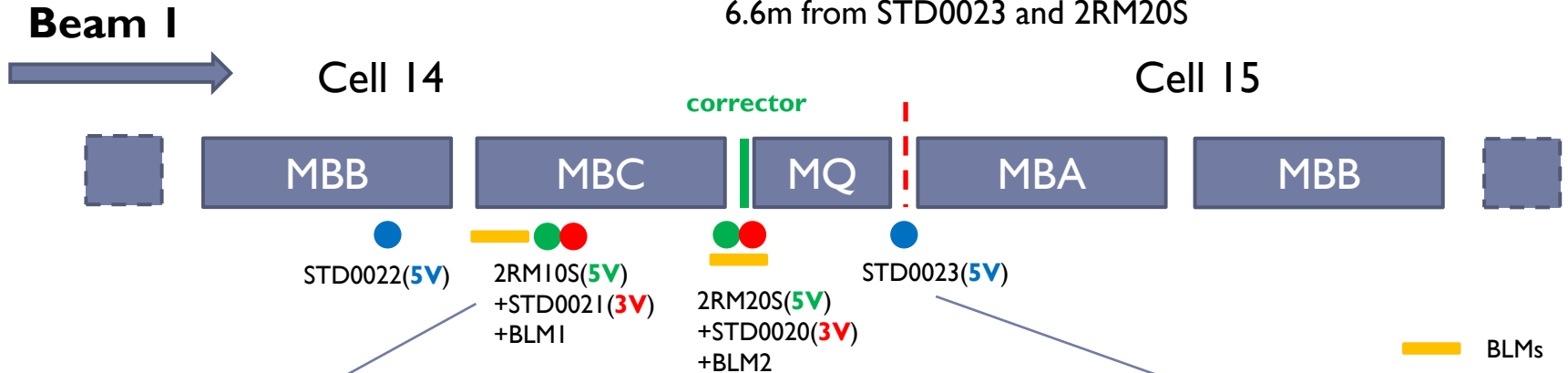
- FIP RadMon (5V)
- BatMon (3V)
- BatMon (5V)

8h requested, 450 GeV/beam requested,
 $5 \cdot 10^9 - 1 \cdot 10^{10}$ p/bunch, 1 bunch/beam

i.e.: +1 FIP RadMon (5V) +1 BatMon (3V) +2 BatMon (5V) + 2 BLMs

2RM20S: 3925m
 2RM10S: 3913m

23m between the two BLMs
 60cm from BLM1 and 2RM10S
 3.9m from STD0022 and BLM1
 6.6m from STD0023 and 2RM20S



(brief) Status of H4IRRAD

- The H4IRRAD test area is almost finished
- <http://cern.ch/h4irrad> up and running → documentation will be uploaded there and on the EDMS node ([link](#))
- Documentation for DSOs/RSOs in advanced phase ([link](#))

		P1	P2	P3
		35 26 Apr 31 May	35 31 May 5 Jul	35 5 Jul 9 Aug
T2 -H2	NA Setup 4	22	10 0 25	CALICE CMSMPGD CMS PLT CALO NA61 TR 11
T2 -H4	NA Setup 4	22	6 0 14	H4IRRAD A RD51 PHOT.G H4IRRAD CMS CAL LHCb MEGAS C 6
T1 -H2	NA		ALICE CERF RD42	DEPFET APPS A ABCM

- If TAX intervention will go smoothly, the preliminary plans calls for start of H4IRRAD beam for the **8th June** (effectively 9/10th)
- SPS Schedule
<http://spsschedule.web.cern.ch/SPSschedule/schedules/ps/2011/v100/all.pdf>
- Users meeting this Friday to discuss test schedule
- Parallel discussion with PS/SPS coordinator to improve the scheduling and **prioritize H4IRRAD tests**

