Status of Linac4 accelerating structures

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general news from CERN

At the LHC performance workshop in Chamonix (24-28 Jan.) it was decided that:

- The LHC will run in 2012 (instead of having a long shutdown), possibility to see indications for the Higgs in 2011 and confirmation in 2012, 3.5 TeV also useful to cover a large part of the energy range available for supersymmetry.
- In 2011 the energy will stay at 2 x 3.5 TeV, going higher was considered too risky. This will re-considered during the Christmas break 2011/12.
- An option to replace the PSB by an RCS (instead of upgrading the PSB to 2 GeV) is proposed by R. Garoby and will be studied within the next 6 months.

New schedule for Linac4 start-up

- The long shutdown to consolidate the splices is now planned for 2013 until ~June 2014.
- Linac4 foresees to be ready by that date!
- Complete installation must be finished by April 2013:

TENTATIVE SCHEDULE - CONNECTION LINAC4 DURING LONG SHUT-DOWN 2013/2014 - version 2.2.11

2013												2014												COMMENTS
12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	
					Linac4 commissioning																				L4 commissioning as from schedule, TL commissioning in parallel
															Transfer line commissioning										PS closed
													PSB modifications												3 month duration as in standard plan
																PSB commissioning									3 month duration as in standard plan
																			PS/SPS commissionin						1 month duration as in standard plan
Long LHC Shut-down (19 months)																			?						Questions:
																									1. interferences (installations) during 2013/14
																									2. availability of PSB equipment by January 2014
																									3. installation of transfer line completed by March 2014
																									4. options to extend LHC shut-down by 2 months
																									5. availability of ion source

Schedule for CCDTL

- assuming that the final delivery date still holds, we have to foresee the following schedule:

	module at CERN	module assembled & tested	module ready for installation
CCDTL 1	Sep-11	Dec-11	Mar-12
CCDTL 2,3	Dec-11	Mar-12	Jun-12
CCDTL 4,5	Mar-12	Jun-12	Sep-12
CCDTL 6,7	May-12	Aug-12	Nov-12

installation and alignment inter-tank elements

Drift Tube Linac

- Drift tube production started in Spain as a collaboration with ESS- Bilbao, in exchange they receive the complete construction drawings and knowledge of the CERN DTL.
- Contract for construction of the tanks is signed (Spain).
- Contract for girders is in preparation.
- Welding of the drift tubes, copper plating of tanks, assembly and tuning will be done at CERN.

PIMS

- machining works in Poland at the Soltan Institute for Nuclear Physics (IPJ) + subcontractor (CPL),
- electron-beam welding of ports at FZJ in Germany,
- fine machining of EBW parts at IPJ,
- shipment to CERN,
- clamping, RF measurements, machining of tuning islands, large EBW works for final assembly,

PIMS prototype

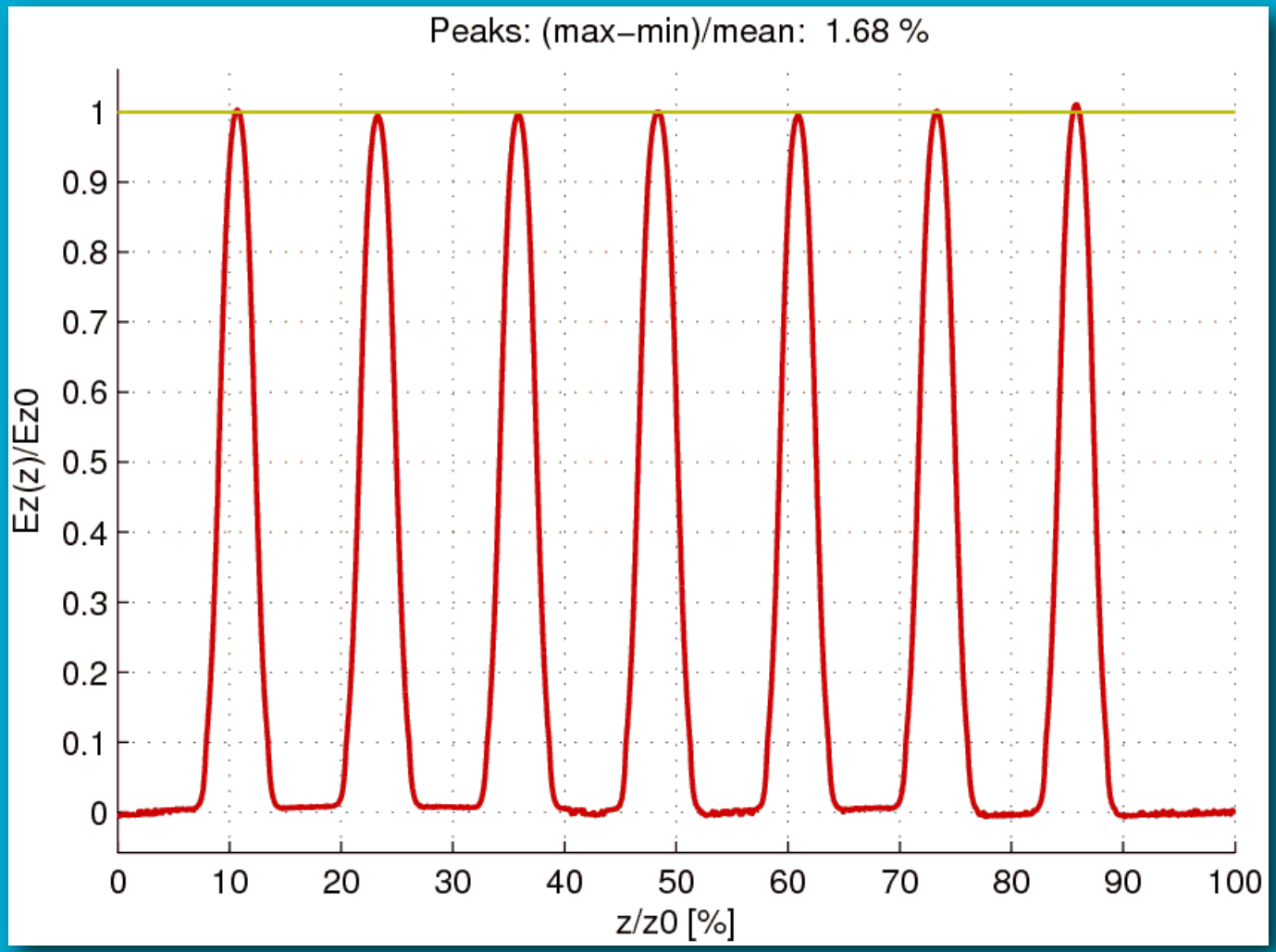
- installed in a bunker in 3 MeV test stand

expected*
Q-value: 22000

measured
Q-value: 20800
(95%)

**incl. losses due to: tuning rings, tuners, welds*

Field flatness



conditioning history

day 2010	T_{RF} [h]	com.	P_{peak}	T_{pulse} [µs]	vacuum [mbar]	X-ray $_{axis}$ [mSv/h]	X-ray$_{ext}$ [µSv/h]
2.11.	2	setup	1 kW	800	$5 \cdot 10^{-6}$	0	0
3.11.	6	multipactor	1 .. 10 kW	25	$8 \cdot 10^{-6}$	0	0
4.11.	6		max ~ 750 kW 12 dBm	180	$8 \cdot 10^{-6}$	12	14
5.11.	2	modulator	max	300	$4 \cdot 10^{-6}$	15	20
8.11.	4	roof, temp.	max	500	$1 \cdot 10^{-6}$	17	30
9.11.	5	trigger, temp.	9.7 dBm	800	$8 \cdot 10^{-7}$	17	36
10.11	3		12 dBm	800	$1 \cdot 10^{-6}$	25	44
sum	28	cavity conditioned to P_{peak}~ 750 kW, f_{rep}=2 Hz, T_{pulse}=800 µs					

Status of PIMS

- Contract with IPJ and FZJ was signed on February 11th 2011.
- Start of construction in February 2011.
- Delivery of first cavity (pieces) foreseen for June 2011.
- Delivery of last cavity foreseen for July 2012.
- Precise schedule only available after first cavity has been constructed.

Status of PIMS II

- expected schedule:

	cavity at CERN	cavity assembled & tested	cavity ready for installation in tunnel
PIMS 1	Jun-11	Nov-11	Feb-12
PIMS 2	Sep-11	Jan-12	Mar-12
PIMS 3,4	Nov-11	Apr-12	Jul-12
PIMS 5,6,7	Jan-12	Jun-12	Sep-12
PIMS 8,9,10	Mar-12	Aug-12	Nov-12
PIMS 11,12,13	Jul-12	Dec-12	Mar-13

installation and alignment intertank elements

Notes

- revised delivery schedule,
- payment schedule according to milestones,
- what happens to ISTC in 2012 (we need support for transport to CERN),
- installation and alignment procedure,
- lessons learned from the first module?
- brazing of fixed tuners?
- approval of support drawings,
- meeting schedule.