



Turn around time

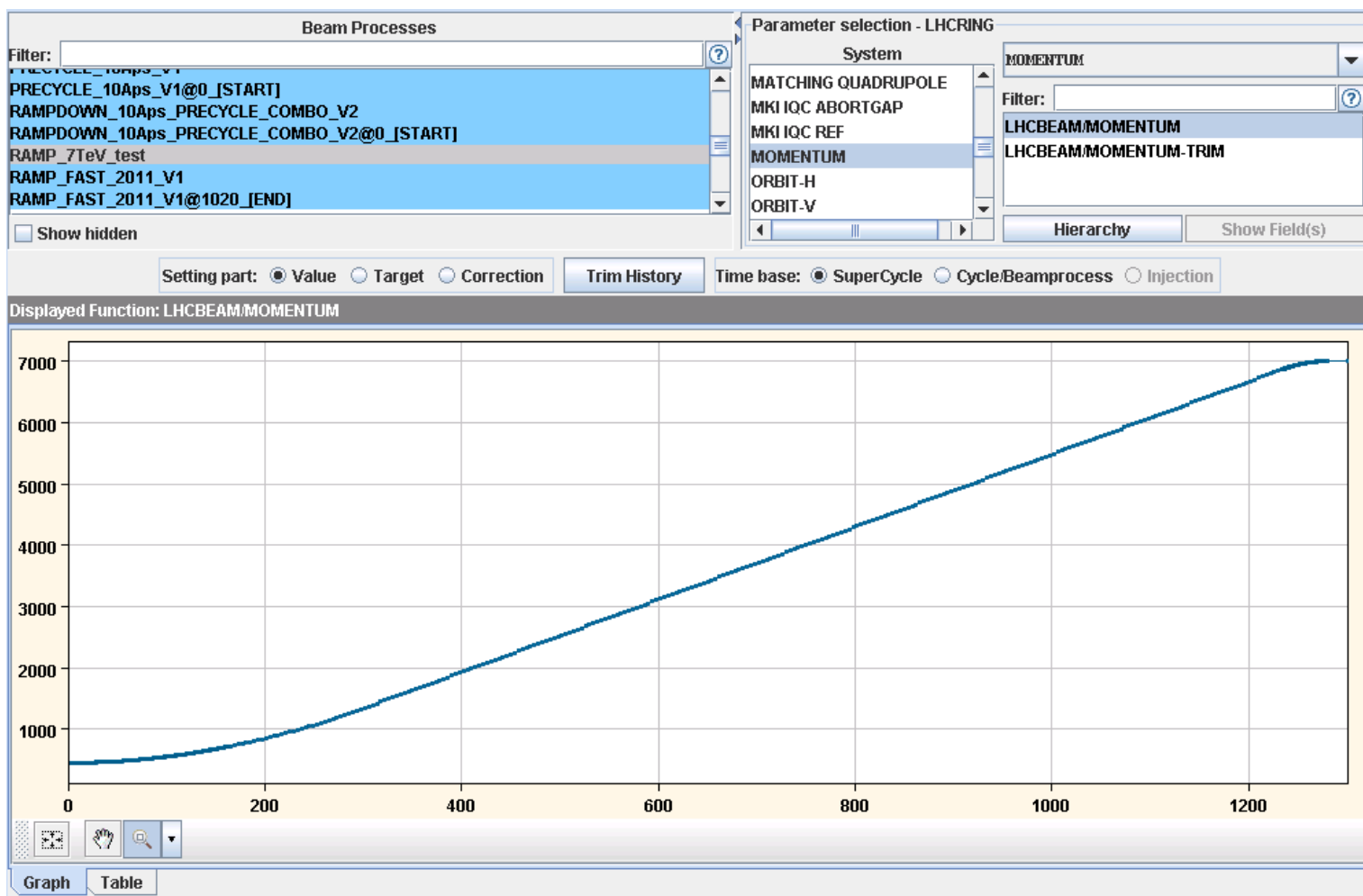
Physics to physics

Phase	Time 3.5 TeV	Time 7 TeV
Ramp down and pre-cycle and checks (ramp-down combo [full precycle])	40 [52]	60 [82]
Pre-injection preparation, ramp to injection	10	10
Checks with set-up beam (tunes, orbit etc.)	15	15
Nominal injection sequence	25	25
Ramp preparation	5	5
Ramp	18	22
Squeeze – let's double it for with squeeze to 15 cm and ATS optics	10	20
Adjust	5	5
TOTAL	128 [140]	162 [184]

With a little bit of room for optimization



Ramp to 7 TeV



Ramp to 7 TeV given same PLEP parameters presently in use:
1300 seconds (~22 minutes)



7 TeV ramp-down/precycle

Beam Processes

Filter: RAMPDOWN

- RAMPDOWN_10Aps_PRECYCLE_COMBO
- RAMPDOWN_10Aps_PRECYCLE_COMBO@0_[START]
- RAMPDOWN_10Aps_PRECYCLE_COMBO@0_[START]_Fill(1233)_2010-07-22_22:36:11
- RAMPDOWN_10Aps_PRECYCLE_COMBO@0_[START]_Fill(1234)_2010-07-23_15:36:15
- RAMPDOWN_10Aps_PRECYCLE_COMBO@0_[START]_Fill(1234)_2010-07-23_15:39:06
- RAMPDOWN_10Aps_PRECYCLE_COMBO@0_[START]_Fill(1234)_2010-07-23_22:35:33
- RAMPDOWN_10Aps_PRECYCLE_COMBO_V2**
- RAMPDOWN_10Aps_PRECYCLE_COMBO_V2@0_[START]
- RAMPDOWN_10Aps_PRECYCLE_COMBO_V2@0_[START]_Fill(1239)_2010-07-25_16:09:03
- RAMPDOWN_3.5TeV_PRECYCLE_COMBO
- RAMPDOWN_3.5TeV_PRECYCLE_COMBO@0_[START]
- RAMPDOWN_7TeV_test

Show hidden

Setting part: Value Target Correction Time base: SuperCycle Cycle/Beamprocess Injection

Displayed Function: RPHFC.UJ14.RQX.L1/REF, ROD.A12/I

Parameter selection - LHCRING

System	Type Groups	Parameters
RF_NOT_USED	K	Filter: [?]
ROMAN POTS	K_SMOOTH	RPHFC.UJ14.RQX.L1/REF
SEPARATION/RECON	I	RPHFC.UJ16.RQX.R1/REF
SKEW SEXTUPOLES	I_AP	RPHFC.UJ56.RQX.R5/REF
SMP	IREF	RPHFC.USC55.RQX.L5/REF
SPS FREQUENCY	IREF_NESTED	RPHGC.UA23.RTOX2.L2/REF
TRANSVERSE DAMPING		RPHGC.UA27.RTOX2.R2/REF
TRIPLET CORRECTORS		RPHGC.UA83.RTOX2.L8/REF
TRIPLETS		RPHGC.UA87.RTOX2.R8/REF
TUNE		RPHGC.UJ14.RTOX2.L1/REF
TUNE_REF		RPHGC.UJ16.RTOX2.R1/REF
TUNE_TRIM		

Select All Select ... Hierarchy Show Field...

Search parameter by name: [?]

Legend

- RPHFC.UJ14.RQX.L1/REF
- ROD.A12/I

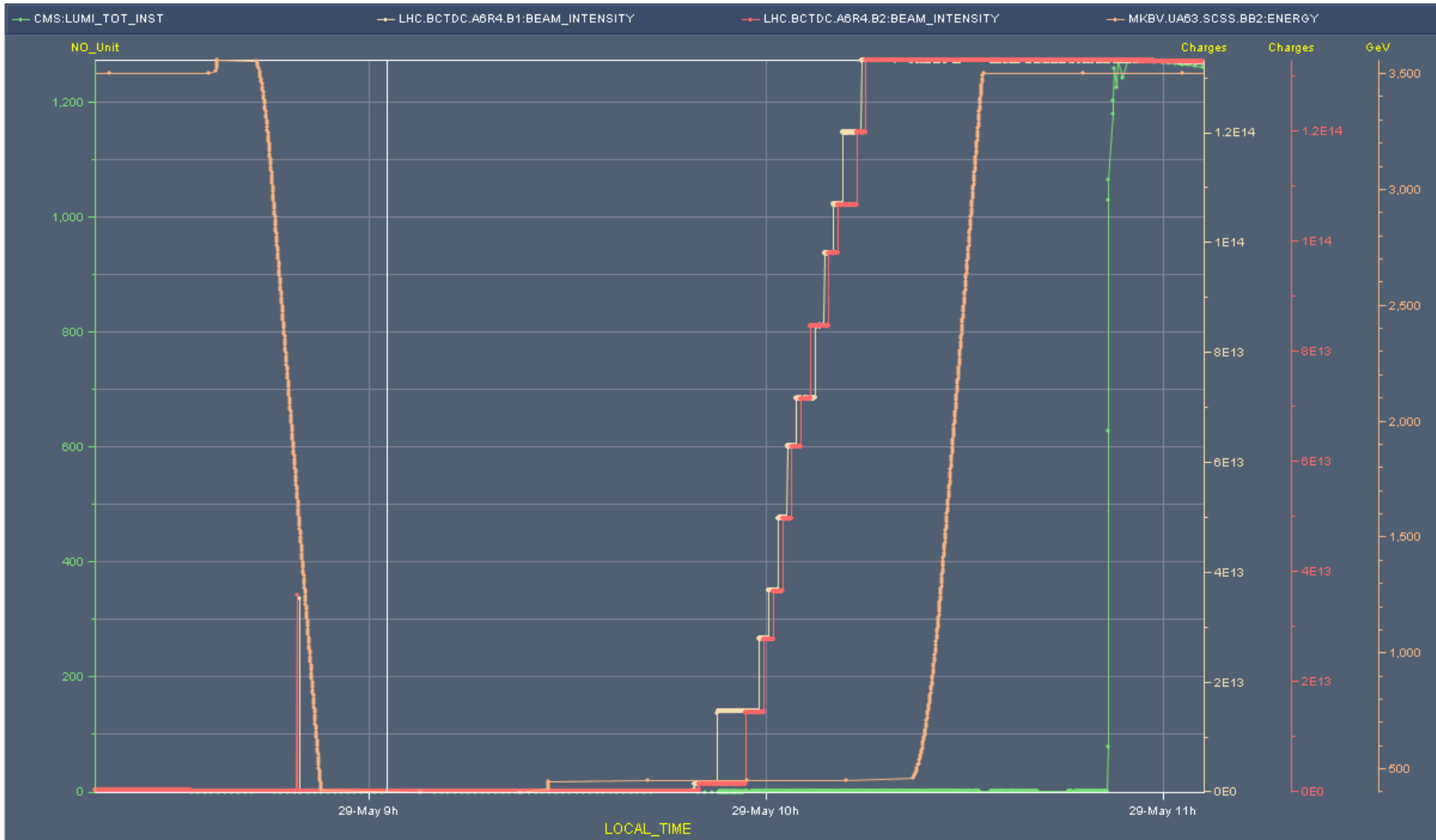
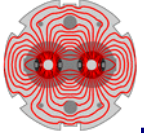
Trim Abort Trim Cancel Last Trim Apply



In reality

- 3.5 TeV dump to stable beams: about 2h20. Good result considering that this was the first fill with a larger bunch number. Fill : 1815 Start : 2011-05-29 08:41:45

Mode	seconds	minutes
RAMPDOWN etc		56
INJPROT	955	16
INJPHYS	1900	32
PRERAMP	240	4
RAMP	1058	18
SQUEEZE	593	10
FLATTOP	52	1
ADJUST	254	5
		142

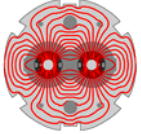




Injection – important

Pilot in, check Q, Q', orbit, sync loop, phase	10m
SPS switch to 12 & check	5m
SPS switch to 36 & check	10m
13 injections/beam	18m

- injector well set up, smooth switches between pilot, 12b & 36b
- lines well optimized, beam quality good
- above two criteria not always guaranteed



Observations

- Injection still a little shaky but ramp, squeeze, collide, optimize is a well oiled machine
 - Very few fills lost to issues (beam, instrumentation, feedbacks, controls, software, OP) in these phases
- We dump very few fills
- Turn around is not dominated by the mechanics, it is dominated by equipment faults



Observations

- Losing a beam to a fault is one thing, having to give access to fix it is another
 - QPS, power converters, cryogenics, LBDS...
 - **Effective turn-around goes up enormously**
- Some long, long time-outs for cryogenics
- Turning around can cause problems
- Long fills make sense
- **Machine availability is the issue**
- **It will change...**

- LEP2 – mature machine – fully optimized turnaround – short fills – dominated by RF trips