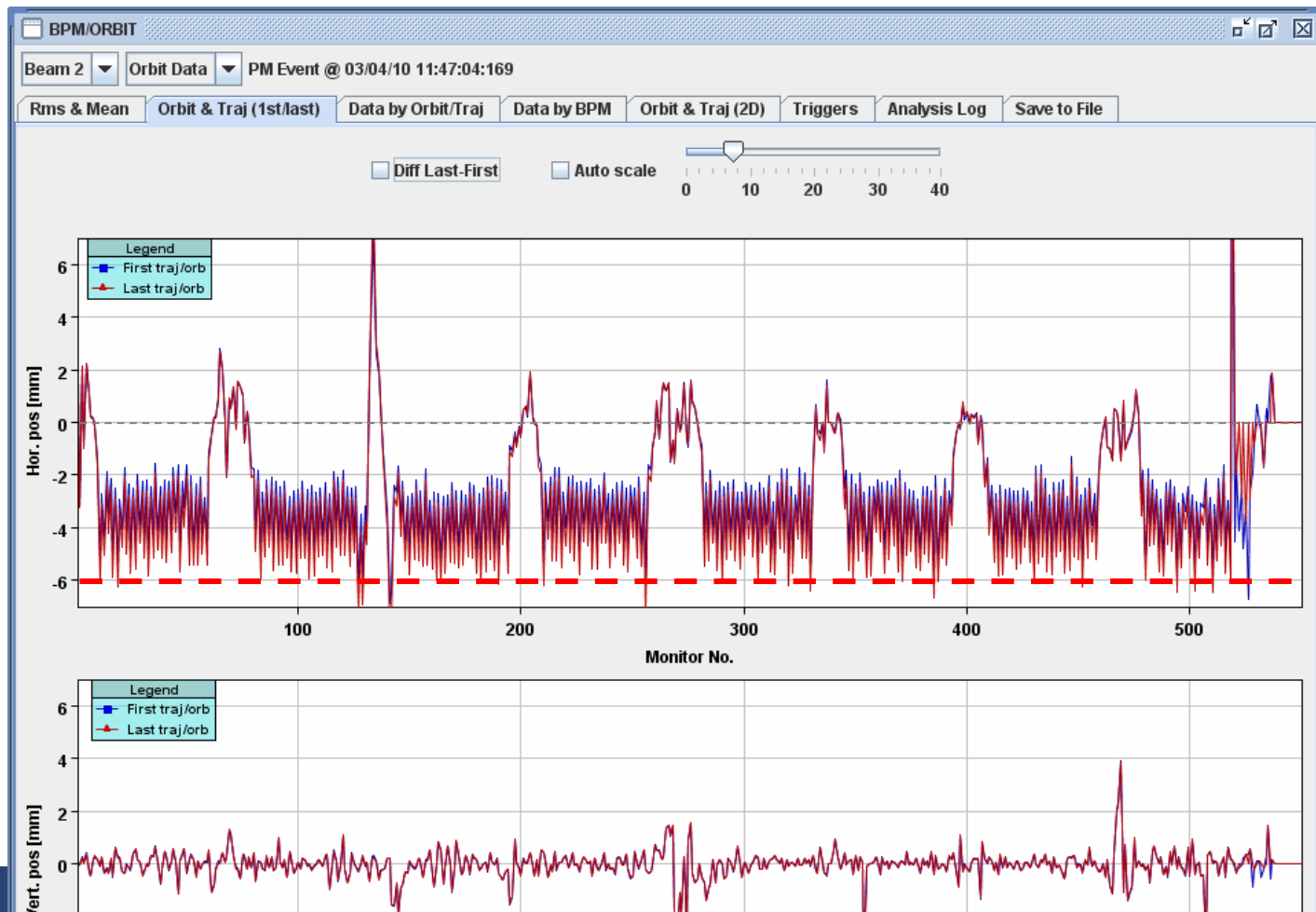




- Post-mortems
- FMCM tests with beam
- Higher intensity
- BLM configuration
- Outcome of last restricted MPP

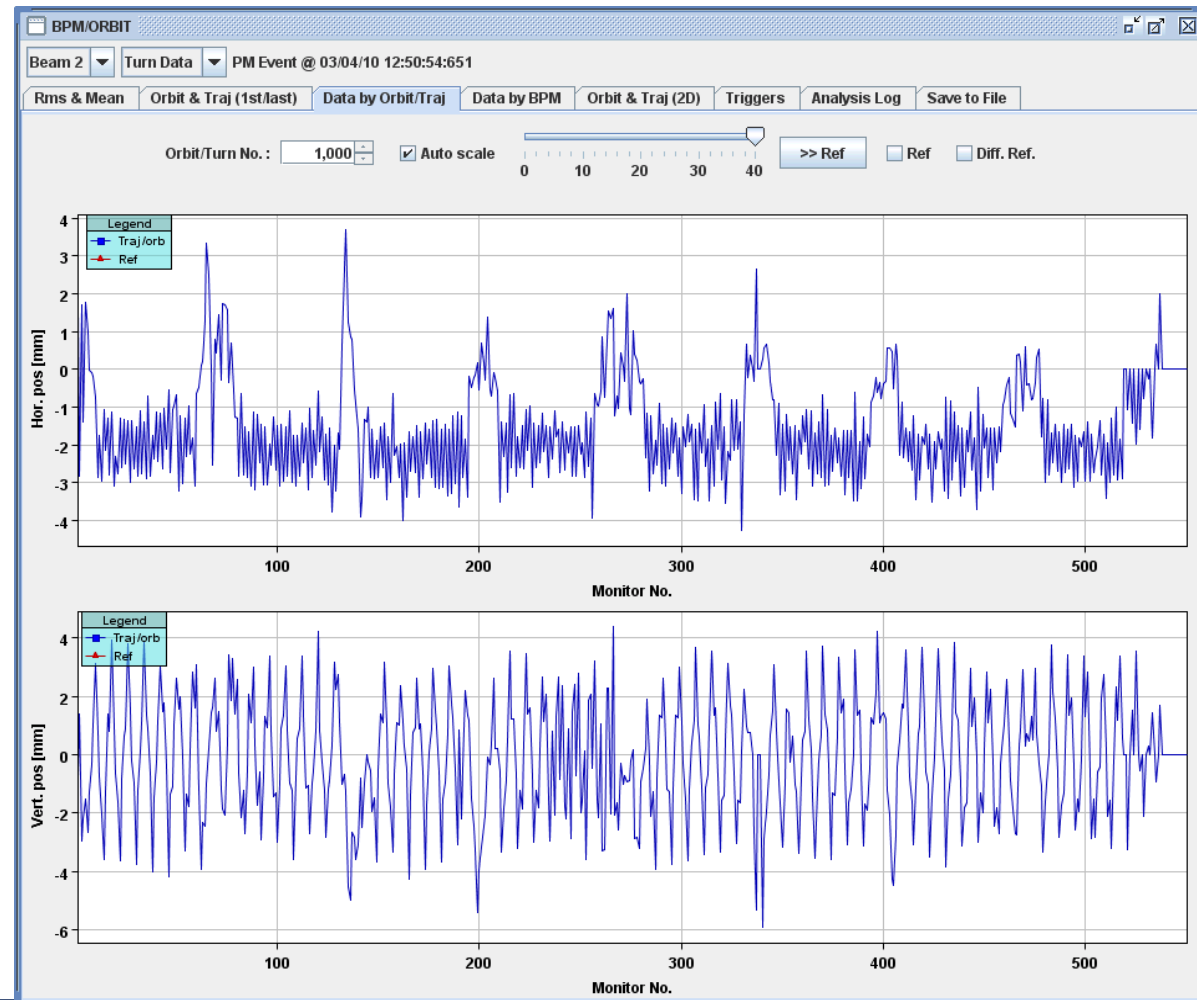
- Collected a large number of PMs:
 - Loss of cryo → PIC.
 - RQTF/D trips → PIC.
 - RQF trip (nQPS) → PIC.
 - BLMs
 - Collimator positions
 - MPS tests (unbunched beam tests for TCDQ, SIS, FMCM, etc)
 -
- No anomalies found at the level of the protection systems, but a few events at injection with fast loss over 2-3 turns where the cause is now clear.

- SIS triggers on large orbit excursion (> 12 BPMs over 6 mm B2 H plane) during a measurement of the non-linear Q' : too large fRF trim.



Threshold

- Beam excursion interlock (± 3.5 mm) triggered on beam kick in the vertical plane (same MD as before...)



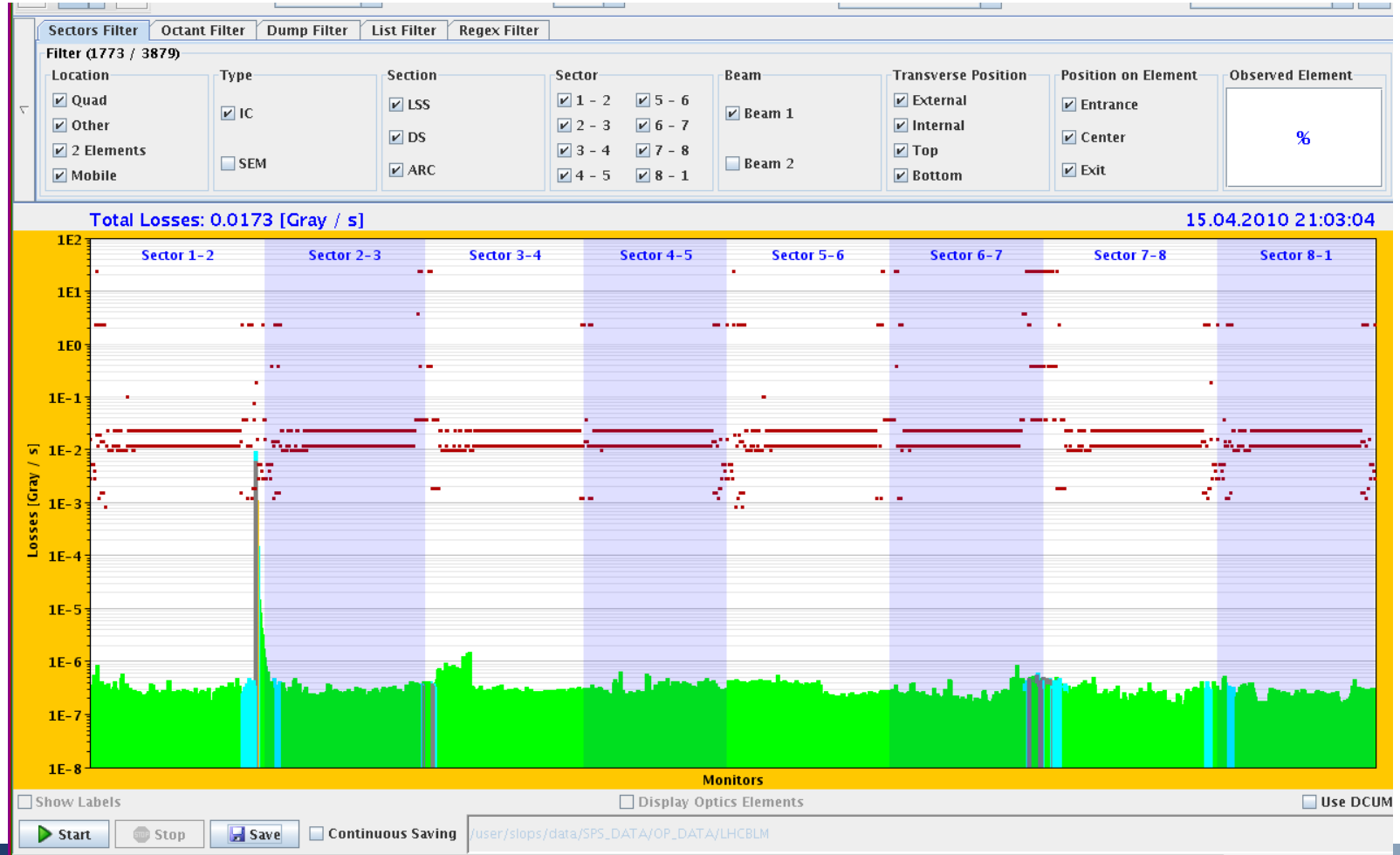
- Tests of FMCMs with beam – all tests passed : no detectable beam movement, no losses (except un-bunched beam)
 - For RD1's :
 - $\beta^* = 2 \text{ m} : \beta_x = 515/805 \text{ m}$ while $\beta^* = 0.55 \text{ m} \beta_x = 1850/2940 \text{ m}$

Circuit	Energy	Conditions	Time
RD1.LR1	450		10.03.2010 12:26:07
RD1.LR5	450		10.03.2010 13:09:33
RD34.LR7	450		10.03.2010 12:52:44
RQ4.LR3	450		10.03.2010 13:40:24
RD1.LR1	3500	$\beta^* = 11-10-11-10$	22.03.2010 00:17:13
RD1.LR1	3500	$\beta^* = 2-10-2-10$	11.04.2010 01:52:03
RD1.LR5	3500	$\beta^* = 2-10-2-2$	13.04.2010 21:51:26
RQ5.LR7	3500	$\beta^* = 2-9.5-2-2$	15.05.2010 17:55:43



BLM Configuration

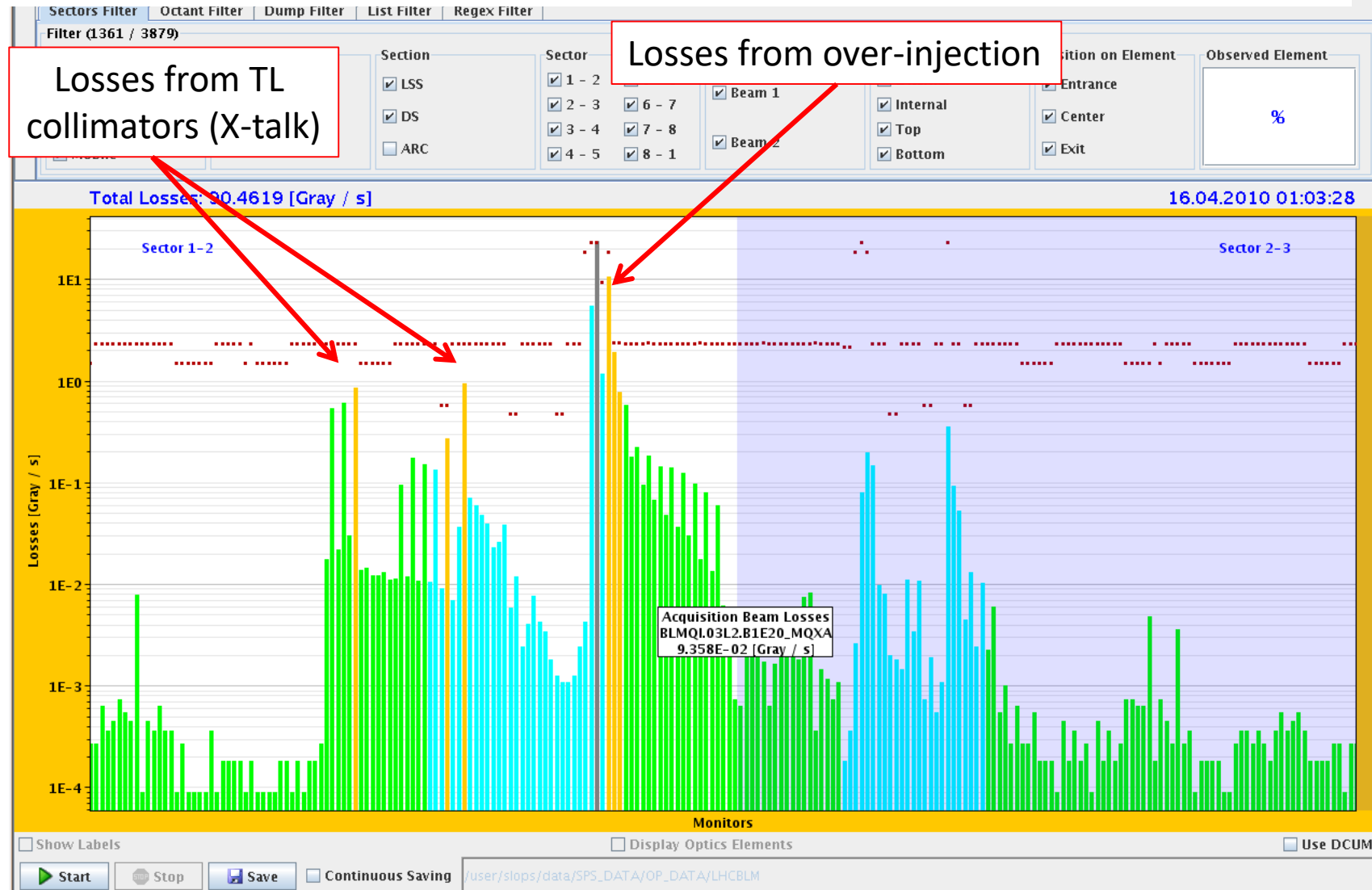
- All BLMs are now connected to the unmaskable BIS input except:
collimators IR3 + IR7, some elements involved in (over-)injection.
 - **Green: unmaskable (BIS), Cyan: maskable (BIS), Grey: not connected to BIS**



- Higher intensity – beam1 – 15.04.2010
 - Switching between PROBE and INDIV cycle in the SPS is now working smoothly: adjusted some settings for the SPS rephasing.
 - Over-injection working well in IR2 (only one dump from pilot send to TDI – BLM on MBXA).
 - Over-injected $1.1E11$, collimators at nominal 4.5 sigma settings.
 - Emittance at $1E11$: 2.8 μm H, 2,5 μm V.
 - The losses in the injection region do not scale with intensity: above $5E10$, the losses go down (in absolute!). Max. losses for $4E10$ - $5E10$ p
 - >> Change the intensity increase plan? Push to higher I/bunch earlier?
 - Large losses on B1 cleaning collimators for B1 ad compared to B2
 - >> Recheck after next collimator setup at injection.

Essentially ready for high intensity bunches !

- Example of over-injection of $1E11$ – 40 μ s integration





Safe Stable Beams Flag

- Issue with SAFE_STABLE flag:
 - After emergency dump, mode not changed (remains STABLE BEAMS).
 - In the preparation phase of ramp-down, the RBs move up in current and then back down (crossing STABLE BEAMS energy range): ‘oscillating’ SAFE_STABLE flag...

- >> ‘Fix’: waiting for a discussion among experiments on the modes at the end of fills....



Beam Presence Flag

- Some 'issues' with the BPF (→ see Ben's slide):
 - Oscillation signal because the intensity is at the limit.
 - **Please do NOT send emails (or the like) to D. Belohrad asking him to change the thresholds !!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!**
 - >> **NOT SAFE**
 - >> **VERY CRITICAL PARAMETER**
 - I have asked David to REFUSE any request that is not channeled through me and Ben & Bruno and to inform us if he ever needs to make a change !



Road to higher intensity

- Meeting of the LHC restricted MPP of 14th April 2010.
 - Outline the roadmap to increasing intensity.
 - All members present:
R. Assmann, B. Dehning, R. Schmidt, J. Wenninger, B. Goddard.
J. Uythoven, M. Zerlauth, A. Siemko, M. Lamont, M. Ferro-Luzzi



Towards higher I : general points

- There 3 areas that require work/improvement for higher intensity:
 - Completion of MPS commissioning steps.
 - Injection target: safe beam (for the moment).
 - Collimation setup for and with higher intensity.
 - Will require continuous follow up (also dump + TL prot) !
 - Operational issues.
 - Sequences, mistakes...



Path to higher Luminosity : short term

Situation: MPS commissioning tests are not completed!

- Step 1: complete the squeeze commissioning.
 - **Factor 4-5 in luminosity**
 - Operate for 1-2 fills with present bunch configuration
- Step 2: increase the number of bunches from 2 to 3 (at constant intensity/bunch).
 - Total intensity at 3.5 TeV: $3E10$ p.
 - Exactly at the limit of the setup ('safe') beam intensity at 3.5 TeV.
 - **Factor 2 in Luminosity (collision pattern)**
 - Provides room for EOF work

We will not be able to go beyond this point before the technical stop (26th April)



Path to higher intensity

- Complete work for INJECTION of high intensity bunches.
 - Basically ready – some fine tuning + BLM thresholds !
- Setup of collimators for and with high intensity at INJECTION.
 - Up to 2 bunches of $5E10$ /bunch → more precise setup

Aim is to complete those steps by middle of next week

>> possibility for 'high bunch intensity' collisions at 450 GeV (with 'safe' beam).

- Collimator movement during the ramp.
 - Scaling injection settings to 3.5 TeV 'intermediate'
 - Requires orbit feedback in the ramp
- Complete all missing MPS setup (≈ 10 shifts)
- Increase of intensity at 3.5 TeV
- Precise collimator setup at 3.5 TeV and for squeeze...