Fast Losses Quench Test preparation

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for BLM team

QTSWG meeting

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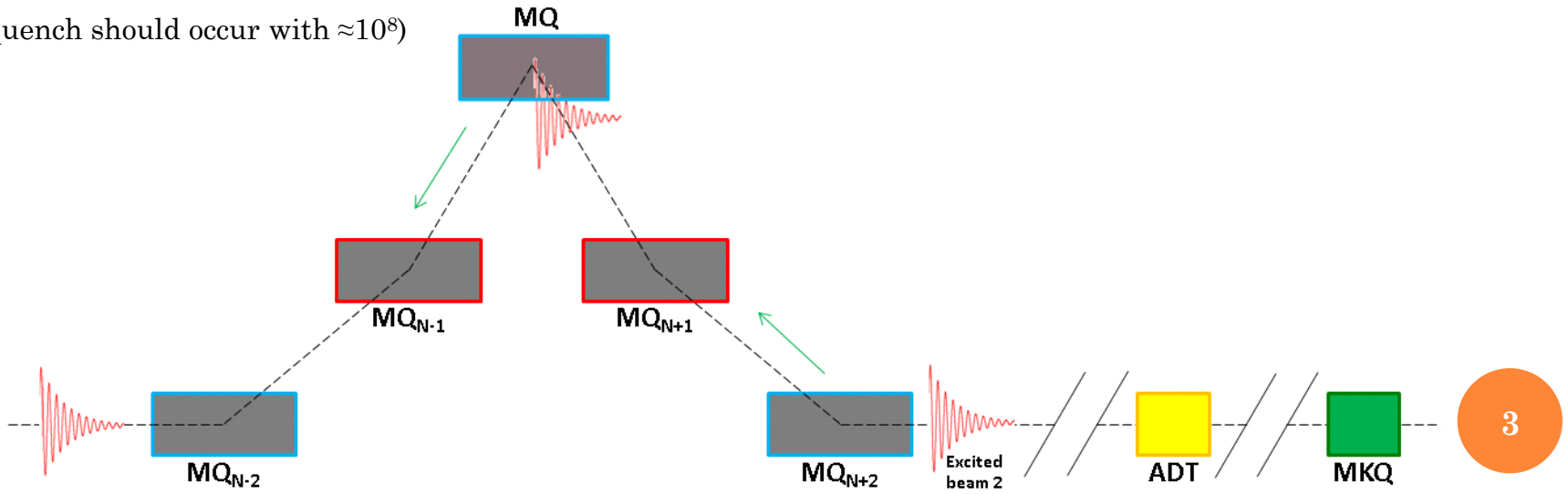
Outline

1. **Quench test description**
2. **Radiation in L6**
3. **Installation of new equipment**
4. **Intensity measurements**
5. **Actions to be taken**

General information

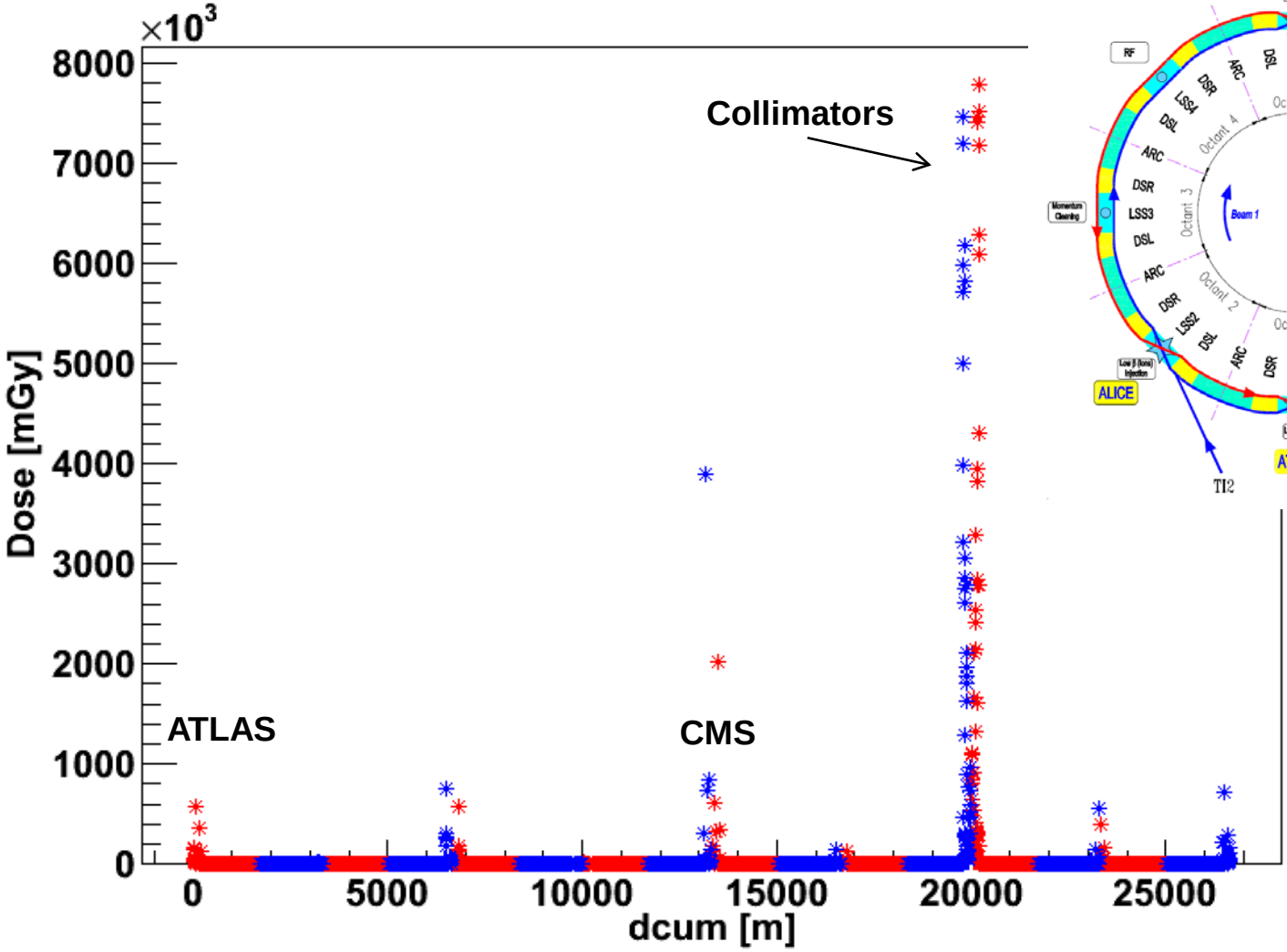
Fast Losses Quench Test – the end of LHC run 2013

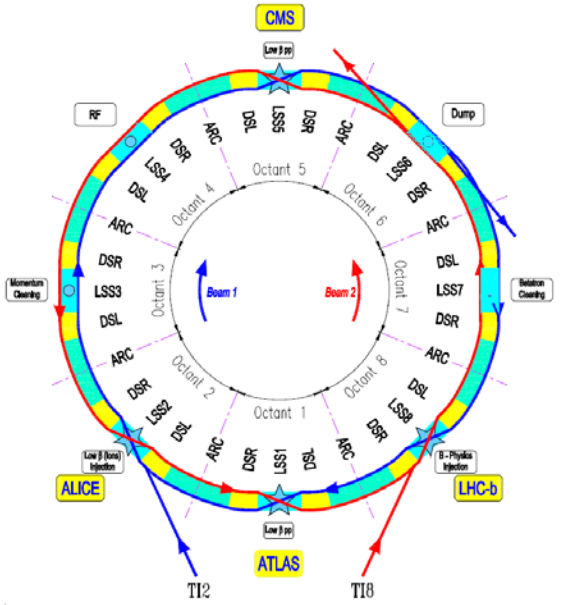
- Preparations provided: 2 MDs – ADT Fast Losses Test and the ADT combined with MKQ Fast Losses Test
- Additional test to be done: Test of the scraping procedure and instrumentation sensitivity
- Loss duration: ≈ 1 ms
- Beam: 2, horizontal (based on MD results, UFO loss orientation, machine protection)
- Cell: 12L6
- Challenges: beam intensity (below $2 \cdot 10^9$ protons the beam is not seen by many systems, models predict that quench should occur with $\approx 10^8$)



RADIATION ALONG THE LHC

Input files provided by Eduardo

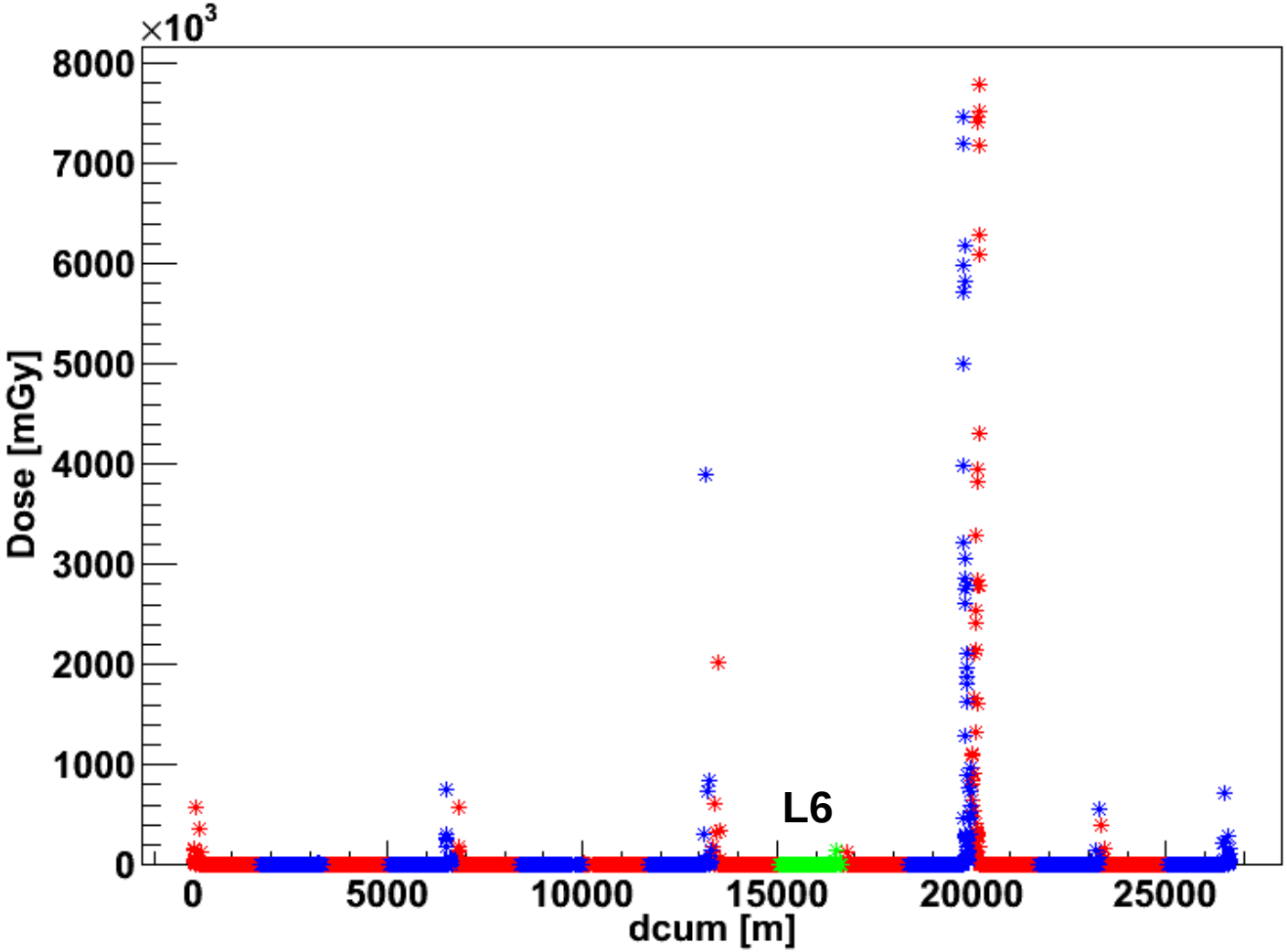




Accumulated dose in November 2012

RADIATION ALONG THE LHC

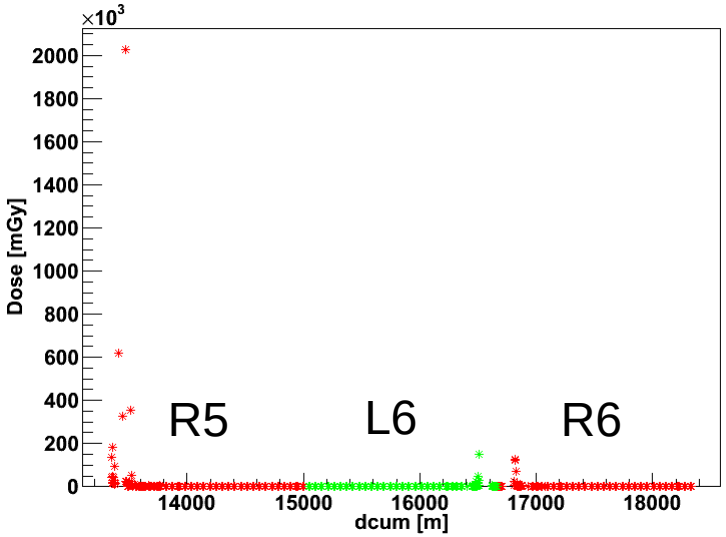
Accumulated dose in November 2012

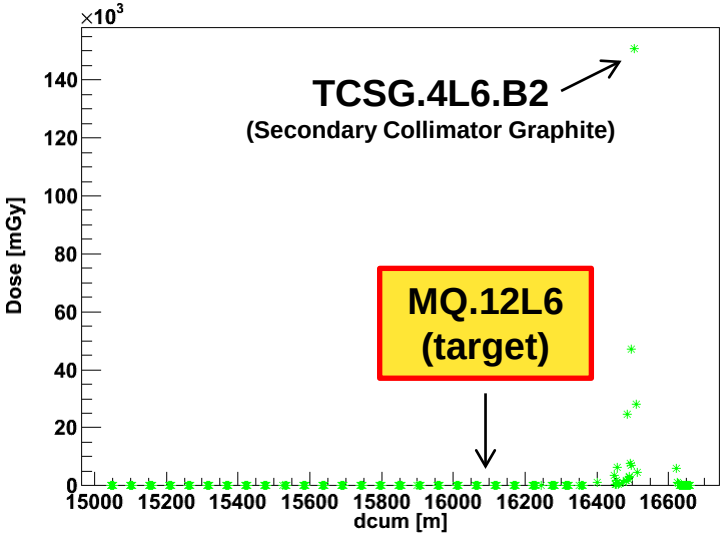


Fast Losses Quench Test will be performed in cell 12L6

BEAM INTENSITY

L6 and its vicinity





Accumulated dose in November 2012

L6

- Comparing to other places, L6 is not hot
- Typical radiation for arcs

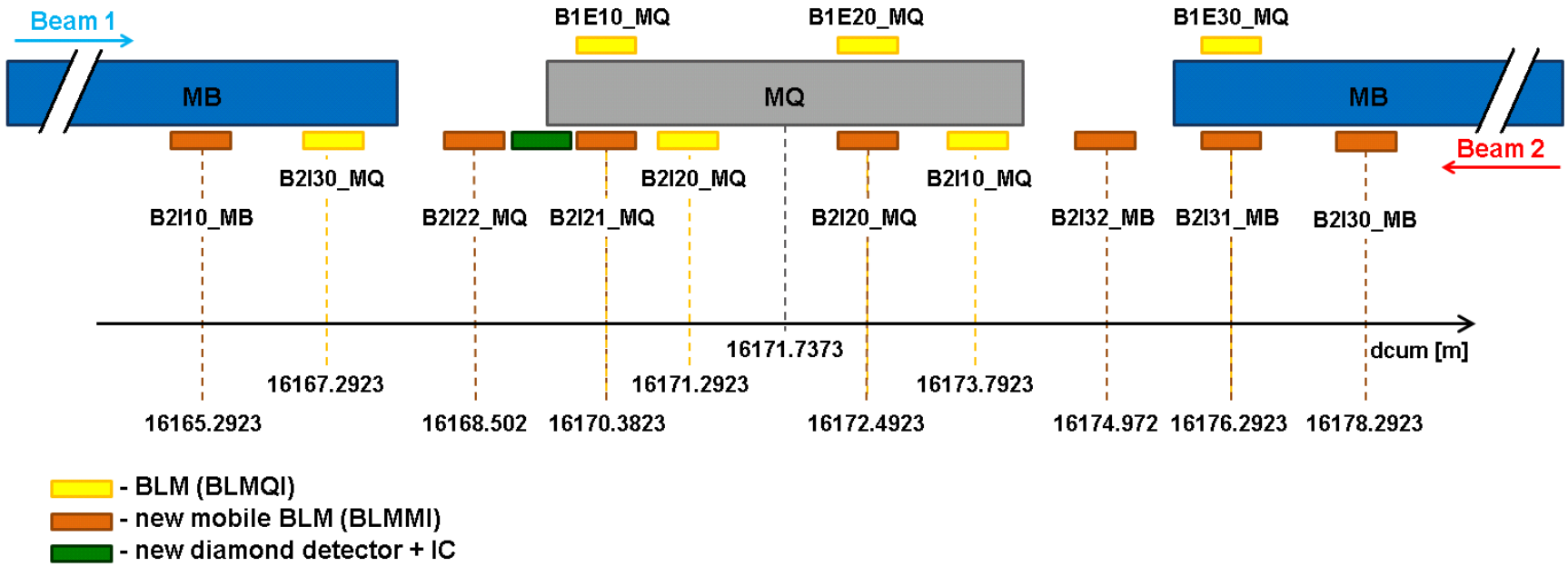
General information

Cell: 12L6

Location: Versonnex

Additional monitors:

- 7 mobile BLMs
- 1 diamond detector + ionization chamber

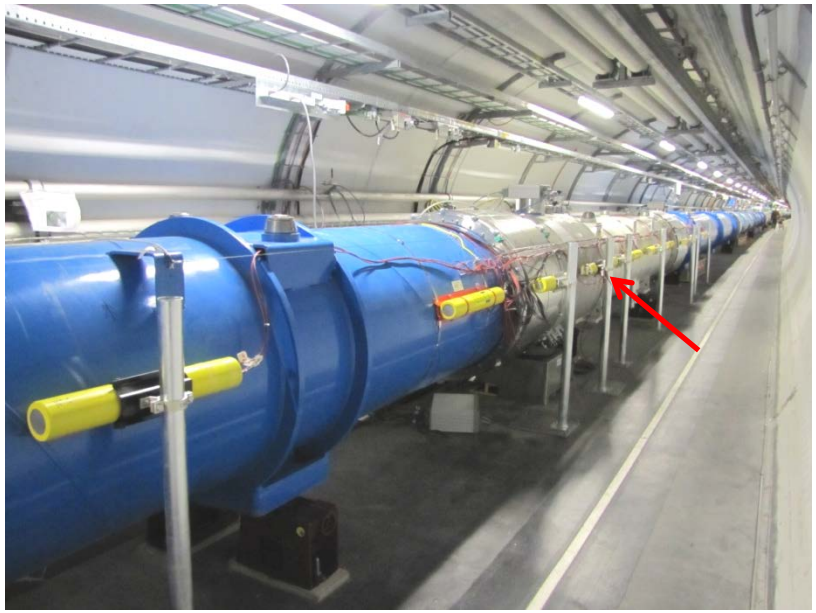


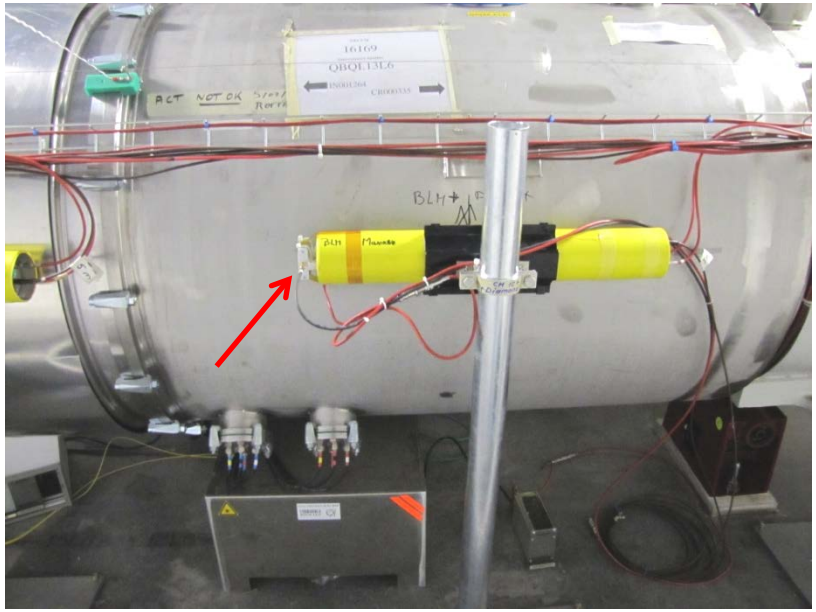
Before

Beam 2 internal BLMs

Beam 1 external BLMs

After





- 7 mobile monitors on B2 side

- 1 diamond detector + ionization chamber

The oscilloscope will read the diamond detector signal to provide synchronization with the QPS measurements.

INTENSITY MEASUREMENTS

- 10 bunches with 1e9

  (vertical blow-up and scraping, excitation in the horizontal plane)
- 2 ramps
- 2 quenches needed

MEASUREMENTS:

a) Intensity:

- LHC longitudinal density monitor (LDM) (Adam Jeff)
- Signals from ADT pickups
- Diamond BLMs in point 4 (can provide bunch-by-bunch measurements but probably the sensitivity is too low)
- WS (based on the signal amplitude?)

b) Emittance:

- BSRT
- WS

TO BE DONE

- ADT test: 30.01.2013
  - Testing the scraping procedure
  - Checking the instrumentation sensitivity
  - Testing the synchronization between BLM UFO Buster and ADT excitation
  - Constant loss rate for the Steady State Quench Test (if some time left)
- The QPS oscilloscope installation and testing (M. Bednarek)
- New BLM thresholds (just before the Quench Test)
- Something more?

THANK YOU FOR YOU ATTENTION !

Questions?

Comments?

Remarks?