Collimator tests in the SPS and TT40 – preliminary thoughts

G. Arduini after discussion with R. Assmann
When?
Week 41

- Week 41 (04/10 – 08:00 ➔ 05/10 – 08:00)
  - Setting-up of the coast at 270 GeV/c with
    - TOTEM beam:
      - n x 4 bunches (525 ns spacing)
      - $N_b = 0.4 – 1.1 \times 10^{11}$ p/bunch
      - $\varepsilon^*$ close to $1 \mu$m
    - LHC beam:
      - n x 72 (or multiples of 12) bunches (25 ns spacing)
      - $N_b = 1.15 \times 10^{11}$ p/bunch
      - $\varepsilon^*$ close to $3.5 \mu$m
  - Measure lifetime, emittances, stability for the above beams
  - Tests instrumentation in coast: particularly needed and still missing LHC BPM in bunch by bunch mode over 1000 turns and Orbit with MOPOS
Week 42

Week 42 (11/10 – 08:00 ➔ 12/10 – 08:00)

- Setting-up of the coast at 270 GeV/c with TOTEM beam (1.1x10^{11} p/bunch) -3 h (AB/OP, G. Arduini, T. Bohl)
- Commission BLMs, measure response function (feasible with low intensity?) – 6 h – (B. Dehning, B. Holzer,...)
- Beam based alignment – close collimators to 3 mm – 9 h (B. Dehning, B. Holzer, R. Steinhagen, J. Wenninger, ...)
- Impedance measurement – 6 h (H. Burkhardt, F. Zimmermann, G. Arduini...)
Week 43

- Week 43 (18/10 – 08:00 ➔ 19/10 – 08:00)
  - Setting-up of the coast at 270 GeV/c with TOTEM beam -2 h (AB/OP, G. Arduini, T. Bohl)
  - Impedance measurement – 6 h (H. Burkhardt?, F. Zimmermann, G. Arduini...)
  - Setting-up of the coast at 270 GeV/c with LHC beam -3 h (AB/OP, G. Arduini, T. Bohl)
  - Vacuum measurements with beam loss at shallow angles -3 h- (J. M Jimenez, ....)
  - Trapped modes -3 h- (T. Kroyer,...) Can it be in parallel?
  - LHC feedback with BL -4 h- (B. Dehning, B. Holzer, R. Steinhagen, J. Wenninger,...)
  - BL maps (3 h) (B. Dehning, B. Holzer,....)
Week 44

- Week 44 (25/10 – 08:00 ➔ 26/10 – 08:00)
  - Setting-up acceleration to 450 GeV/c and extraction with pilot and LHC beam -10 h (AB/OP,G. Arduini, J. Wenninger, T. Bohl, P. Baudrenghien)
  - Setting-up of extraction with pilot and LHC beam – 2 h (J. Uythoven, B. Goddard)
  - Collimator test (4 h?)
  - Material tests (4 h?)
## Instrumentation needed

<table>
<thead>
<tr>
<th>Device</th>
<th>Logging</th>
<th>FD</th>
<th>Available</th>
<th>Responsible</th>
</tr>
</thead>
<tbody>
<tr>
<td>LHC BLMs</td>
<td>1 Hz</td>
<td>Y</td>
<td>MTG number?</td>
<td>?</td>
</tr>
<tr>
<td>SPS BLM</td>
<td>?</td>
<td>Y</td>
<td>Coast?</td>
<td>L. Jensen</td>
</tr>
<tr>
<td>LHC BPM orbit</td>
<td>1 Hz</td>
<td>Y</td>
<td>Y</td>
<td>L. Jensen/R. Steinhagen</td>
</tr>
<tr>
<td>LHC BPM fast</td>
<td>On req.</td>
<td>N</td>
<td>N/A in coast</td>
<td>L. Jensen</td>
</tr>
<tr>
<td>MOPOS</td>
<td>On req.</td>
<td>N</td>
<td>N/A in coast</td>
<td>S. Jackson</td>
</tr>
<tr>
<td>BCT/FBCT</td>
<td>&gt;1 Hz</td>
<td>N</td>
<td>Continuous ?</td>
<td>L. Jensen/R. Jones</td>
</tr>
<tr>
<td>IPM/WS</td>
<td>1 Hz?</td>
<td>N</td>
<td>Continuous ?</td>
<td>A. Guerrero/M. Albert</td>
</tr>
<tr>
<td>PLL</td>
<td>&gt;1 Hz</td>
<td>N</td>
<td>?</td>
<td>R. Jones</td>
</tr>
<tr>
<td>Q-meas</td>
<td>?</td>
<td>N</td>
<td>Y</td>
<td>R. Jones</td>
</tr>
<tr>
<td>Scrapers &amp; coll.</td>
<td>-</td>
<td>-</td>
<td>Y</td>
<td>J. J. Gras</td>
</tr>
<tr>
<td>Long. profile</td>
<td>?</td>
<td>Y</td>
<td>Y</td>
<td>F. Follin</td>
</tr>
<tr>
<td>Vacuum pressure</td>
<td>1 Hz</td>
<td>Y</td>
<td>Y</td>
<td>I. Laugier</td>
</tr>
<tr>
<td>E-cloud mon.</td>
<td>?</td>
<td>N</td>
<td>?</td>
<td>J. M. Jimenez</td>
</tr>
</tbody>
</table>

Note: FD stands for 'Available'.
Other issues

- Availability in PCR of collimator control experts (AB/ATB)
- Availability of BDI people for setting-up (also in week 41...) and then on-call
- Assumed that collimator core team will be omni-present and ubiquitous
- Identify list of experts on-call for:
  - RF, PS, PSB, Controls
- Data correlation (MTG number+timestamp)