Minutes of 3$^{\text{rd}}$ Collimation Upgrade Specification Meeting

Participants: F. Cerutti (FC), L. Lari (LL), A. Marsili (AM), V. Parma (VP), S. Redaelli (SR) (Chairman), M. Schaumann (MS).
From Manchester: M. Serluca.
Excused: R.W. Assmann, J. Jowett (JJ), F. Caspers, A. Rossi, D. Wollmann.

1 Comments to the minutes

The minutes were updated taking into account FC's comments on the quench limits. No further comments were brought up at the meeting.

2 Follow up of actions from last meeting

- FC added to FLUKA simulations the contribution from electromagnetic dissociation for Pb–Pb collisions. Updated slides of the presentation that he gave on Feb. 23$^{\text{rd}}$ are available at this link.
  The aspects related to magnet lifetime are not yet addressed.

- FC provided input files with the agreed format for the collision products. **Action: SR** make this files availabel on the ColUSM web site.

3 LHC loss map simulations with Merlin (M. Serluca)

Slides available at this link.

3.1 Summary of the presentation

M. Serluca from Manchenster presented preliminary results of LHC loss map simulations done with the tracking code Merlin. The case considered is the 2011 machine configuration at 3.5 TeV. This allows direct comparisons with recent simulations with SixTrack by R. Bruce (Collimation Study working group of Dec. 19$^{\text{th}}$, 2011). The Merlin simulations are well advance. The results of linear optics calculations were compared with results from MADX and the agreement is good. Preliminary results of loss maps for the horizontal halo case indicate a good agreement with respect to the results of SixTrack simulations and to the beam loss measurements during loss maps at the LHC. A problem with the TCT collimator centring in the interaction regions is being addressed. It likely comes from the fact that the collimator jaws are not centred around the closed-orbit in the IRs. This gives too large losses in IR2. Different halo models to be used as inputs for the simulations are presently under study.

3.2 Discussion

SR commented that the tertiary collimators in the IRs must be centred around the local closed–orbit: collimator half–gap settings are expressed assuming that left and right jaws are centred symmetrically around the beam position.

SR asked how much time a complete loss map simulation with Merlin requires. MS replied that a loss maps with about 6.4 million input particles takes about 2–3 h.

SR also asked about the longitudinal resolution of the aperture checks. MS replied that it is 10 cm like in the standard simulations done at CERN. FC asked if the aperture information could be included in SixTrack as it is done in Merlin, i.e. avoiding to split the intermediate steps of saving trajectory files that are than taken as an input for the aperture program BeamLossPattern. SR replied that when the collimation studies were setup, it was concluded that adding into SixTrack that aperture information with the required accuracy would slow the tracking down too much. Having separated trajectories also allows to ran different scenarios of aperture errors for one single tracking run.

4 Next meeting

The next meeting will be held on
March 16$^{\text{th}}$, 2012, 15:30–17:00.
Room: 874-R-018.

Tentative agenda:
R. Schicker   ALICE detectors to be integrated in DS collimators
J. Jowett   IR2 collimator positions to intercept BEPP losses