Minutes of 8th Collimation Upgrade Specification Meeting

Participants: R. de Maria (RdM), A. Marsili (AM) (scientific secretary), B. Yee Randon (BYR), S. Redaelli (SR) (chairman),

1 First multi-turn cleaning simulations of the ATS optics (A. Marsili)

1.1 Summary of the presentation

AM presented the first results on the collimation cleaning simulations for the ATS optics for HL–LHC. The MadX sequences were provided by R. de Maria. This is the first attempt to use this optics with the collimation version of SixTrack.

AM presented the basic check of optics parameters calculated with SixTrack for the $\beta^\star = 15\,\text{cm}$ case. There is a good agreement with the MadX results. The simulation parameters used and the collimator settings (nominal at 7 TeV) were presented.

Simulations of collimation cleaning include the full chain of tools for loss maps: multi-turn halo tracking, with collimator and aperture check of the trajectory of the halo particles. Horizontal and vertical halos for beam 1, with or without energy spread and different halo sizes were simulated.

The simulation setup is complete to the extent that AM could produce complete loss maps around the ring. However, the analysis of the results clearly indicated a problem in the simulations because the impact parameters on the primary collimators were too high (up to $10\,\sigma$). In addition, there were also primary impact in other collimators in IR7. A possible source for this problem is a wrong matching of the dispersion function for the ATS optics: RdM pointed out that a dedicated correction flag has to be ON to achieved a good dispersion around the ring. This aspect will be checked and reported at the next meeting.

It is also noted that the aperture model used for the this simulations is not yet updated for the ATS layout. The inputs for the BeamLossPattern program will be updated accordingly [**Action: AM**].

1.2 Discussion

SR commented that the crossing angles are not correct for the ATS parameters. AM answered that the values are only wrong in the presentation, but set correctly in the MadX file.

2 Next meeting

The next meeting will be held on:
13th June 2012, 16:00–17:30. Room: 874-1-011 (above CCC).

Tentative agenda:

A. Marsili	Update on the loss maps simulations of the ATS optics
L. Lari, J. Rest Lopez	Status of non-linear collimation studies
A. Marsili	Measurements of TCL losses