LHC MD77

Beta*-reach: IR7 collimation hierarchy limit and impedance requested by amereghe

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Merit: This MD is part of a series of collimation requests aimed at qualifying the collimation settings for beta* smaller than what's presently foreseen for the LHC startup. This MD will study the possibility to further reduce the operational limits of the IR7 hierarchy, taking into account constraints from operational tolerances and impedance. In particular, we want to understand if retractions between primary and secondary collimators can go below the start-up "mm-kept" settings. We also want to understand what is the IR7 hierarchy limit. The merit of this MD is increased if it can be performed several times over the year, to monitor the long-term stability.

MD contact person: A.Mereghetti

MD procedure link: Similar tests performed in Run I, e.g. https://cds.cern.ch/ record/1494126/files/md-note-nominalsettings.pdf? version=1 (Similar tests performed in Run I, e.g. https://cds.cern.ch/ record/1494126/files/md-note-nominalsettings.pdf? version=1)

Category: Normal MD

Beam: Both

Participants: the LHC Collimation Team and the LHC impedance team

OP contact person: B. Salvachua

Description: At flat top, collimators in IR7 are re-aligned to the beam (to ensure optimum centring around the orbit) and loss maps are performed with reduced retractions between primary and secondary collimators (e.g., 2sigma- and 1sigma-retraction). Analysis of collimator centres and loss maps with different settings are used to determine which hierarchy limit is achievable with and without repeating the alignment of the IR7 collimators. For the different tighter settings, the collimator impedance is evaluated through measurements of tune shift when moving in/out collimators.

Time required (Hours): 8

Beam energies:

- Flat top

Optics: collision optics

Optics change: No

Orbit change: No

Collimation change: Yes

RF system change: No

Feedback change: No

What else should be changed: Nothing

Are parallel studies possible?: Yes

More information on parallel studies?

MD requester is ready? Yes

Beam parameters

Bunch intensity (10^{11} ppb): lower than relaxed setup beam flag limit for MDs at 6.5TeV: 1 nominal bunch + a number of pilot bunches per beam (e.g. 24)

Number of bunches: see bunch intensity
Transverse emittance (um): 3.5 or smaller
Bunch length: Nominal

MD status

Time slot assigned?: No
Assigned duration:
Status: Requested
Coordinator MD readiness:
MP classification: A
MP approval: No
rMPP approval: Yes
Need 2 extra hours for ramp down: No