LHC MD108

Collimation quench test for protons at 6.5 TeV requested by belen

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Merit: This study aims at evaluating the quench limits in dispersion suppressors due to collimation losses around the betatron cleaning insertion, at assessing maximum intensit reach for RunII, RunIII and HL. These tests also have the immediate outcome of allowing more optimized settings for the operational BLM thresholds.
MD contact person: B.Salvachua, P. Hermes, S. Redaelli
MD procedure link: https://edms.cern.ch/document/1264646/1 (https://edms.cern.ch/document/1264646/1)
Category: Normal MD
Beam: Either
Participants: Collimation team with BE/BI (BLM), ADT, magnet and MP teams.
OP contact person: B. Salvachua
Description: Collimation quench tests are performed by inducing very large beam losses on the primary collimators of IR7 with collimation settings as in standard high-intensity for physics. This measuring the magnet behaviour in presence of nominal loss distributions in the IR7 DS's that represent the limiting location for collimation losses. Large losses achieved with special setting of the ADT whose excitation window is enlarged to affect several bunches. With this procedure, in 2012 we achieved peak loss rates up to 1kW. Fi with large losses follow a calibration fill when the ADT settings and loss map distributions are calibrated with a few nominal bunches. Tests were successfully performed already 2011 and 2012, see for example https://cds.cern.ch/record/ 1352756/files/CERN-ATS-Note-2011-042%20MD.pdf and https://cds.cern.ch/record/1708365/files/CERN-ACC- NO 2014-0036.pdf?. Corresponding MP notes are also available, for last test is https://edms.cern.ch/document/1264646/1.
Time required (Hours): 16
Beam energies:

- Flat top

Optics: Nominal Flat Top
Optics change: No
Orbit change: No
Collimation change: No
RF system change: No
Feedback change: No
What else should be changed: Special ADT configurations to generate high losses.
Are parallel studies possible?: No
More information on parallel studies?
MD requester is ready? Yes

Beam parameters

Bunch intensity (10^{11} ppb): 1.2 - 1.3
Number of bunches: Many nominal bunches
Transverse emittance (um): 3.75
Bunch length: 1

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