

LHC MD80

Improved BLM-based collimator alignment requested by glvalent

Last modified: 2015-02-18 11:35:02, modified: 2 times

Merit: New algorithms and hardware (BLM acquisition, motor controllers) will be tested to reduce the commissioning time required for beam-based alignment, as well as individual jaw corner alignment. Improvements of the alignment of collimators without BPMs remains essential to improve the LHC time in physics, as more than 80 collimators, including IR1/5, do not feature the new BPM design

MD contact person: G. Valentino, S. Redaelli

MD procedure link: Several similar studies were successfully carried out in 2011 and 2012, e.g. <https://cds.cern.ch/record/1494126/files/md-note-nominalsettings.pdf?version=1> and https://cds.cern.ch/record/1369243/files/ATS_Note_Collimator_Setup.pdf?version=1 (Several similar studies were successfully carried out in 2011 and 2012, e.g. <https://cds.cern.ch/record/1494126/files/md-note-nominalsettings.pdf?version=1> and https://cds.cern.ch/record/1369243/files/ATS_Note_Collimator_Setup.pdf?version=1)

Category: Normal MD

Beam: Both

Participants: Collimation team (potentially support from EN/STI and BE/BI)

OP contact person: B. Salvachua

Description: The collimators will be moved in steps towards the beam and aligned automatically based on feedback from the BLMs. The BLM data rate will be increased from the current 12.5 Hz to ~30 Hz and the resulting reduction in setup time will be measured. In addition, new algorithms for automatic recognition of BLM loss spikes will be tested. Fast BLM acquisitions are being discussed. In the past, orbit interpolations at the collimators were also used - this technique will be also investigated further.

Time required (Hours): 6

Beam energies:

- Flat top

Optics: Injection

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? Collimator hierarchy limit + impedance and potentially others. Improved collimator alignment is the pre-requisite of several MD studies.

MD requester is ready? Yes

Beam parameters

Bunch intensity (10^{11} ppb): 1.1

Number of bunches: 1

Transverse emittance (μm): 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