

LHC MD86

Crystal collimation requested by stefano

Last modified: 2015-02-19 10:17:50, modified: 2 times

Merit: Two bent crystals for beam collimation studies have been installed during LS1 in IR7, on beam 1. The min goals of beam tests in 2015 are to (1) demonstrate crystal channeling and collimation cleaning at 450 GeV and 6.5 TeV and to (2) verify with beam if the installed hardware (crystals and goniometers) are adequate and fulfill the required specs. It is critical to check the hardware before the end of 2015 to decide on potential upgrades at the end of 2015.

MD contact person: Stefano Redaelli

MD procedure link: PhD work by D. Mirarchi in preparation (with collimator settings for crystal collimation tests)
(PhD work by D. Mirarchi in preparation (with collimator settings for crystal collimation tests))

Category: Normal MD

Beam: Beam 1

Participants: S. Redaelli, W. Scandale and collaborators (Collimation and Crystal teams).

OP contact person: B. Salvachua

Description: With IR7 nominal settings, H and/or V crystals are approached to the circulating beams until they become the primary machine restriction. In this conditions, angular scans are performed while monitoring beam losses close to the crystal and a collimators that intercept channeled particles. Once channeling is found, secondary collimators are opened one at a time until we achieve a reduced collimation system that, in presence of crystal collimation, is expected to provide improved cleaning than the present system that uses all secondary collimators. The test is ended with loss maps to measure the cleaning. Similar procedures are applied at injection and top energy. We initially request 2 8h slots.

Time required (Hours): 16

Beam energies:

- Injection
- Flat top

Optics: Nominal

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? Crystals only available for B1. Beam 2 can be used in parallel.

MD requester is ready? No

MD readiness: Detailed collimator settings are defined (PhD work by D. Mirarchi)

Beam parameters

Bunch intensity (10^{11} ppb): 0.5

Number of bunches: 20-30

Transverse emittance (μm): 1 - 2

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