

## LHC MD66

### Beam tail population measurements using collimator scans requested by givalent

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**Merit:** Measurement of the tail population and beam diffusion speed at 6.5 TeV will provide valuable input for LHC collimation operation and future active halo control techniques propose to repeat the measurements successfully done in 2012 at 4 TeV, with protons and also ions (which was never attempted before).

**MD contact person:** G. Valentino, S. Redaelli

**MD procedure link:** Similar procedure applied in previous studies: [https://cds.cern.ch/record/1480603/files/CERN-ATS-Note-2012-074\\_MD.pdf](https://cds.cern.ch/record/1480603/files/CERN-ATS-Note-2012-074_MD.pdf) (Similar procedure applied in previous studies: [https://cds.cern.ch/record/1480603/files/CERN-ATS-Note-2012-074\\_MD.pdf](https://cds.cern.ch/record/1480603/files/CERN-ATS-Note-2012-074_MD.pdf))

**Category:** Normal MD

**Beam:** Both

**Participants:** Collimation team, Collaborators: G. Stancari (FNAL), G. Franchetti (GSI)

**OP contact person:** B. Salvachua

**Description:** With squeezed, separated beams, the IR7 primary collimators will be used to slowly scrape the beam down to  $\sim 2$  sigmas. The jaws will then be retracted in stapes measure the halo repopulation rate and hence the diffusion speed. The procedure will be repeated with colliding beams. The beams will then be dumped by means of a fast jaw movement across the beam to determine the beam distribution in the core and tails. End-of-fill measurements are also proposed to measure diffusion speed with bunch trains in collision for comparisons with single bunches. ADT transverse excitations will be used to observe and calibrate the diffusion speed. The procedure will be repeated with ions as end-of-fill.

**Time required (Hours):** 14

**Beam energies:**

- Flat top

**Optics:** Standard squeeze, separated + colliding

**Optics change:** No

**Orbit change:** No

**Collimation change:** Yes

**RF system change:** No

**Feedback change:** Yes

**What else should be changed:** Nothing

**Are parallel studies possible?:** No

**More information on parallel studies?**

**MD requester is ready?** Yes

### Beam parameters

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

**Number of bunches:** 1-2

**Transverse emittance ( $\mu\text{m}$ ):** 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