


# Status of MP checks for the LHC collimation system


D. Mirarchi on behalf of the LHC Collimation Team, BE-OP-LHC, BE-CEM-MRO, BE-CEM-MTA

223rd Machine Protection Panel Meeting



# Overview MP checks

	Status
Position/Gap Interlocks	
Local Mode Interlock	
Test Power Cut and PRS Reboot Interlock	
Test temperature interlock	
Test RBAC interlock	
Test MCS-Collimator role info	
Goniometers Replacement Chamber Interlock	

 Collimation system testing and commissioning, following the MPS procedure EDMS-889345.

- ✓ Position, energy,  $\beta^*$  limits of all ring collimators tested and validated
- ✓ Local mode interlock carried out for one collimator per beam in each IR
- ✓ PXI of ALL ring, inj. prot, TL collimators rebooted and interlock validated (following LS2, otherwise 1 coll per PXI)
- ✓ All temperature probes tested and validated
- ✓ RBAC and MCS validate looking directly at tables loaded in FECs
- ❖ New FESA class developed featuring threshold functions on goniometer's linear stage:
  - ✓ Classes in SIS updated and interlock on replacement pipe tested and validated
  - ✓ Interlock threshold function limits tested and validated

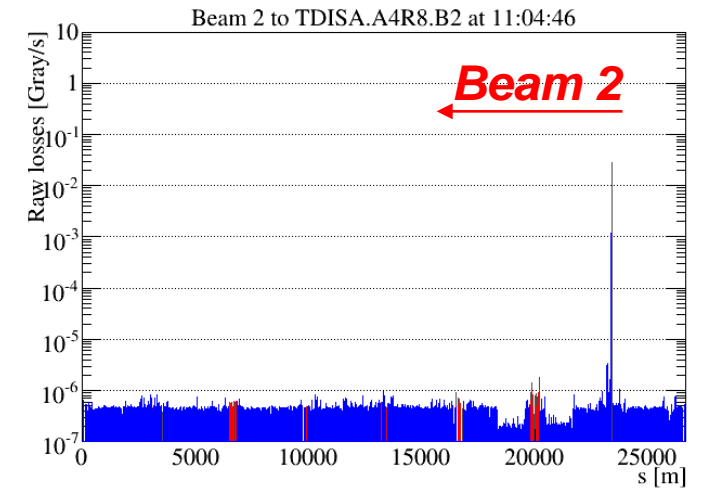
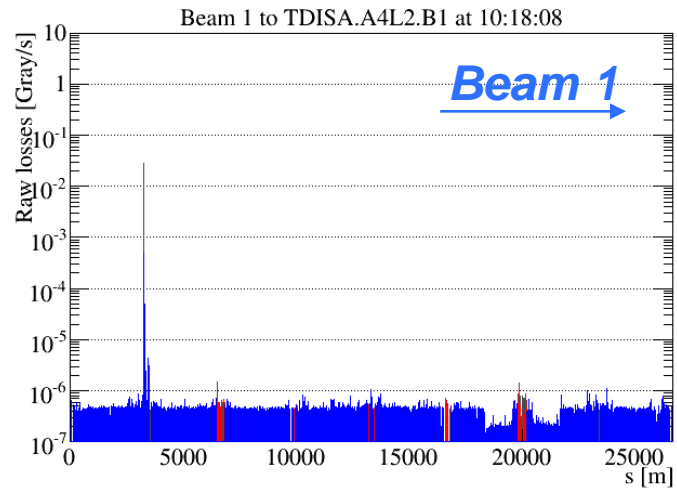
[Links to the elog and collimation web page with detailed information in the checklist](#)

# Status waiting for first beams – Threading

- Beam left “circulating” step-by-step: collimators used to stop the beam in each IR (except IR4...)

 *a.k.a. Threading*

Beam 1	Beam 2
TDIS[A B].A4L2.B1	TDIS[A B].A4R8.B2
TCP.6L3.B1	TCP.B6R7.B2
TCTPV.4L5.B1	TCSP.A4L6.B2
TCSP.A4R6.B1	TCTPV.4R5.B2
TCP.B6L7.B1	TCP.6R3.B2
TCTPH.4L8.B1	TCTPH.4R2.B2
TCTPH.4L1.B1	TCTPH.4R1.B2



Ring coll. at: LD = 0.5mm, LU = -1mm, RD = -1mm, RU = -2.5mm  
 TDIS[A|B] at: L = [4.0|-2.5], D = [2.5|-4.0]

*BP and sequences used to handle collimators worked smoothly in October 2021, tested and validated for tomorrow*

# Status waiting for first beams – Coarse settings

- Reduced set of collimators at **COARSE** settings

*Assuming no surprises will be found in aperture measurements!*

Collimator	IR	Setting		
		Inj.	FT (first ramp)	FT (if squeezing)
TCP (H&V)	7	8 $\sigma$	20 $\sigma$	9 $\sigma$
TCSP	6	10 $\sigma$	25 $\sigma$	9 $\sigma$
TCP	3	12 $\sigma$	30 $\sigma$	30 $\sigma$
TCTP	1/2/5/8	$\pm 15$ mm	$\pm 15$ mm	10 $\sigma$ / $\pm 15$ mm/10 $\sigma$ /15 $\sigma$ (@30cm)
TCDQ	6	20 mm	20 mm	20 mm

- ✓ **Linear interpolation** of settings from **injection to FT**
- ✓ **Two set of FT settings** defined whether or not beams get squeezed: **collimators kept fixed after reaching FT**

*BP and sequences for coarse settings prepared and tested for tomorrow (position&interlock, E& $\beta^*$  limits), more details on collimator settings strategy for 2022 commissioning and physics run at [CWG #262](#)*



[home.cern](http://home.cern)