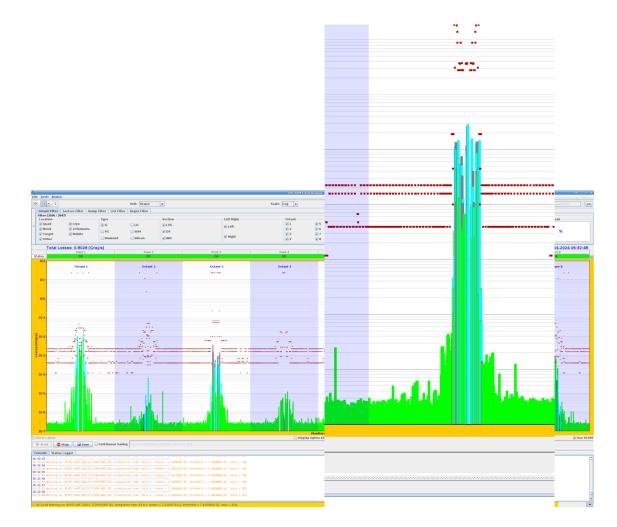# *MD12263: Weak-strong investigation of Long-Range Beam-Beam*

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Motivation

- Collimation hierarchy observed broken when two beams are present
  - No breakage when a single beam is present
- LRBB potentially part of the explanation
- Tried to excite with ADT-AC dipole but then we have two strong beams
  - The excitation in one causes excitation in the other
  - Weak-Strong the cross-excitation much smaller -> Easy to compare to simulations

Basic idea

- Beam 2 with the normal optics measurements configuration with the **exception** of the common : BLM, BCM
    - 1 pilot bunch with no Long-range interaction
    - 1 pilot with full long-range interaction
    - 1 pilot with only long-range interaction in IR1/IR5
- Beam 1 will have a few hundred nominal bunches to create the LRBB encounters
- Plan is to excite with the AC-dipole as well as the ADT-AC dipole for beam 2

Masks and orbit

- Disable the common BPMs for the orbit feedback

- For beam 2 (safe beam flag)
    - AC-dipole
    - Collimators
    - BPM

- Note that since the beam safe flag = FALSE for Beam 1
    - All interlock for collimators etc are active for Beam 1

Simplified procedure

- Prepare Beam 2 for low intensity and Beam 1 for high intensity
- Have collimator settings at nominal for both beams but safe beam flag for beam 2 to make sure everything is working
- Squeeze to 30cm and open the collimators for beam 2 to the approved collimator settings we have for optics measurements (NLO at 30cm sequence)
- Excite with the AC-dipole as well as the ADT-AC dipole

Summary

- MD is important to understand the hierarchy breakage
- No major differences from previous MDs (per beam)
- The big difference is that we now have
  - Beam 1 nominal
  - Beam 2 with safe beam flag