16L2 Aperture Measurement (MD 2725)

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On behalf of the LHC Collimation Team and 16L2 task force

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Motivation

**Merit:**
- Dumps induced by losses in 16L2 serious machine limitations.
- The aim of this MD is to perform local aperture measurements in order to understand if a similar strategy adopted to cure limitations from the ULO can be used also in this case.

**Similarity w.r.t ULO:**

- 4 corr. bump shape
- Something is touched at the end of the available bump range
- Clearer signature

- Nothing is touched in 15R8
- Before thermal cycle
- After thermal cycle

Aperture measurements performed in 16L2 before beam screen flushing did not reveal the presence of any aperture restriction: is it possible that something similar to the ULO happened?

**Main experimental steps:**

1. Beams are shaped using TCPs and/or ADT to define their dimension
2. Local orbit bumps in 16L2 (both beams) in steps of 0.5 σ until losses are observed
MD request

- **Time required:** 4h
- **Species:** Protons
- **Category:** Normal MD
- **Beam:** Both
- **Beam energies:**
  - Injection
- **Optics:**
  - Nominal
- **Beam Parameters:**
  - Bunch intensity \((10^{11} \text{ ppb})\): 0.1
  - Number of bunches: 1
  - Transverse emittance (μm): 1-2
  - Bunch length: 1
- Only changes of IR7-TCPs settings may be required
- Parallel studies could be possible if carefully planned:
  - Work on the other beam without generating losses in IR8

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