

# conclusions on LHC collimator impedance in SPS for APC meeting

little transverse effect expected for single bunch:

- **vertical orbit distortions** ( $\sim 15 \mu\text{m}$ ) might perhaps be barely detectable, with massive averaging
  - **horizontal orbit** should change only by  $\sim 10 \text{ nm}$
  - **energy loss** is tiny ( $< 10^{-8}$ )
  - resolution of **current-dependent phase advance measurements** unlikely sufficient ( $\sim 0.3 \text{ mrad}$ )
  - expected **coherent tune shift** is at the edge of the resolution ( $\sim 2 \times 10^{-4}$ )
  - change in **head-tail growth rates** not detectable
- factor 5 higher sensitivity for **multibunch**, if it can have  **$1 \mu\text{m}$  emittance or aperture at  $3\sigma$**  *(I did not look at trapped modes)*