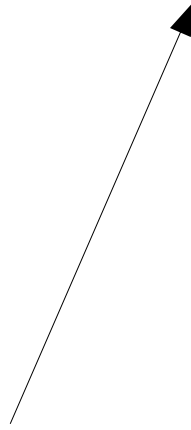# Single bunch stability threshold with flat orbit

X. Buffat, D. Amorim, L. Barraud, N. Biancacci, G. Mazzacano, A. Mereghetti, E. Metral, B. Salvant, G. Trad
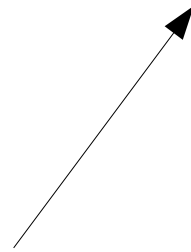
https://cernbox.cern.ch/index.php/s/NtWnmjPCKYjoWMr

1. Inject a single nomial per beam such that they do not interact in any of the interaction regions.
2. Change the target octupole current at the end of the ramp to 550 A.
3. Ramp the beams with otherwise regular operational settings
4. Retract the inner jaw of the TCT and remove the crossing angle bumps in all IPs.
5. Reduce the octupole current in steps until an instability is reached.
6. Measure chromaticity and coupling.
7. Dump the beams.

- Symmetrise TCTs on the crossing plane of all IPs by loading to coarse settings (+-15mm) → Coll. team
  - Similar procedure to collimation setup fill during commissioning
- Set crossing angle knobs to 0

Second fill

8. If the threshold is in agreement with theory, identify the source of the discrepancy by :

    (a) Performing the same procedure up to step 4 leaving the crossing angle in IP1 only.

    (b) Reducing the octupole current until an instability is reached, remaining above the octupole threshold measured above.

    (c) If no instability is reached, repeating the octupole scan, turning on the crossing angle in IPs 5,2 and 8 one after the other.

- Symmetrise TCTs on the crossing plane of all IPs by loading to coarse settings (+- 15mm) → Coll. team
  - Similarly to collimation setup during commissioning
- Set crossing angle knob to 0 in IPs 2, 5 and 8

Second fill

8. If the threshold is in agreement with theory, identify the source of the discrepancy by :

   (a) Performing the same procedure up to step 4 leaving the crossing angle in IP1 only.

   (b) Reducing the octupole current until an instability is reached, remaining above the octupole threshold measured above.

   (c) If no instability is reached, repeating the octupole scan, turning on the crossing angle in IPs 5,2 and 8 one after the other.

- Symmetrise TCTs on the crossing plane of all IPs by loading to coarse settings (+- 15mm) → Coll. team
  - Similarly to collimation setup during commissioning
- Set crossing angle knob to 0 in IPs 2, 5 and 8
- Set crossing angle knob back in IP5, set the knob to 0 in IP1
  ...