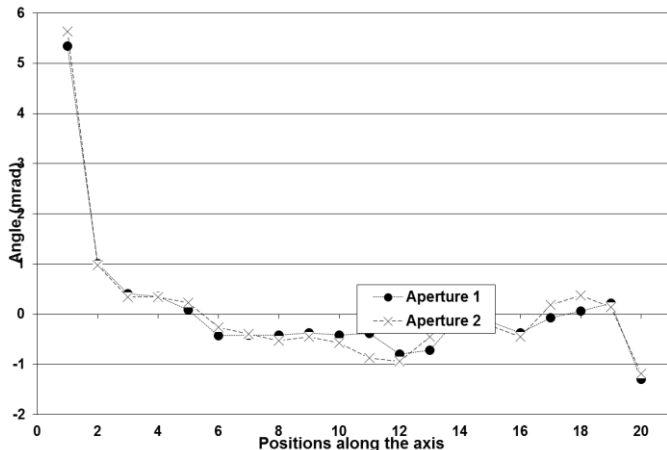# A FIRST ATTEMPT TO REVIEW THE ALIGNEMENT SPECIFICATIONS FOR THE TRIPLET
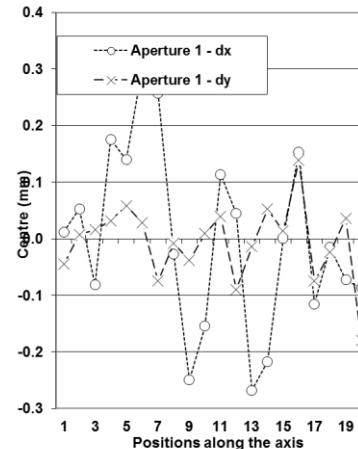
E. Todesco

CERN, Geneva Switzerland

- One needs to specify the length of the measuring mole (integral) to specify the waviness of the
  - centre of the quadrupole
  - direction of field
- In the LHC production we had measuring moles of 750 mm
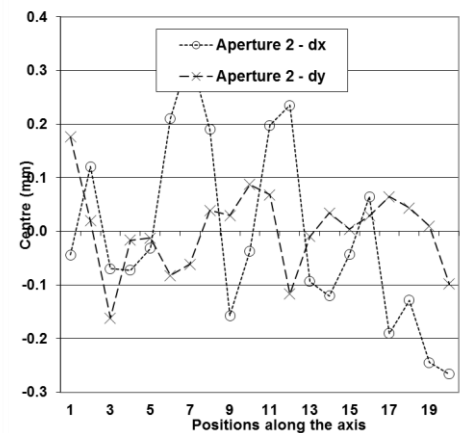 - I would suggest specifying something similar

- Waviness
  - I would set a target on the peak to peak (better than on the sigma)
  - ±0.5 mm for the centre
  - ±2 mrad for the axis direction
    - This corresponds on a position of the midplane within ±0.11 mm

HCMB__A001-2000101 (Ansaldo 01) - Collared coils - Main field direction

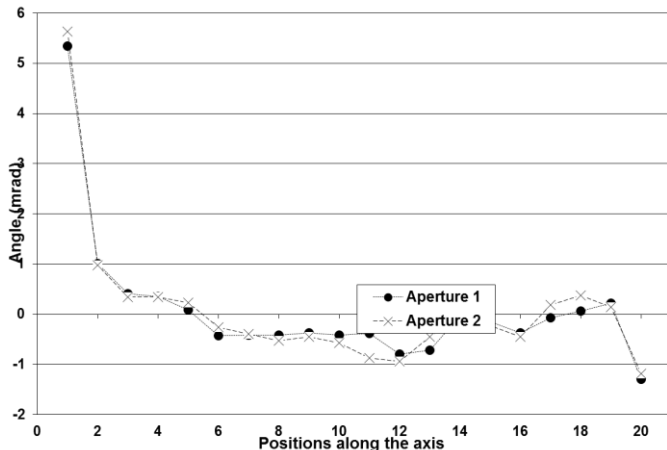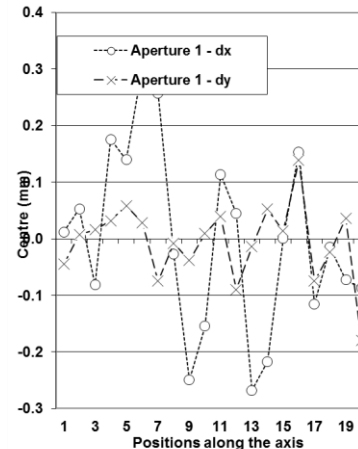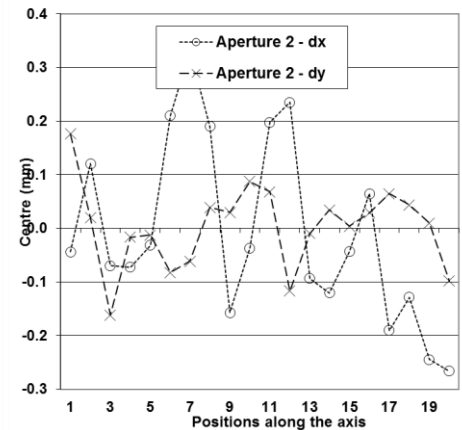HCMB__A001-2000101 (Ansaldo 01)
Collared coils - Magnetic centre

HCMB__A001-2000101 (Ansaldo 01)
Collared coils - Magnetic centre

- Case of Q2a and Q2b
  - The average axis is well defined and can be measured with a stretched wire
  - The magnet average axis will be aligned with respect to the beam with the precision ensured by the geometry colleagues

- Case of Q1 /Q3: two magnets split in two
  - One needs a alignement requirement for the two magnets in the cold mass
    - I would start from the hypothesis that the two axis with respect to the common axis are
      - ±0.5 mm for the centre
      - ±2 mrad for the axis direction (corresponds to ±0.5 mm in the outer part of the cold mass)

- Today there is a draft under discussion giving
  - Offset: +/- 0.2 mm
  - Roll: +/- 0.5 mrad
  - Pitch: +/- 1 mrad
  - Yaw: +/- 0.5 mrad
    - With a 4 m long magnet, a longitudinal (along the axis, not in the transverse plane) angle of 0.5 mrad can bring the end of the magnet out of 2 mm !
  - I am not sure these angles are the best way to express things
  - We should have an iteration on this

- On the top of the Q1/Q3 one should add the precision of the survey (capability of alignment)