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
COLD MASS FOR Q1/Q3

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 an alignment 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)