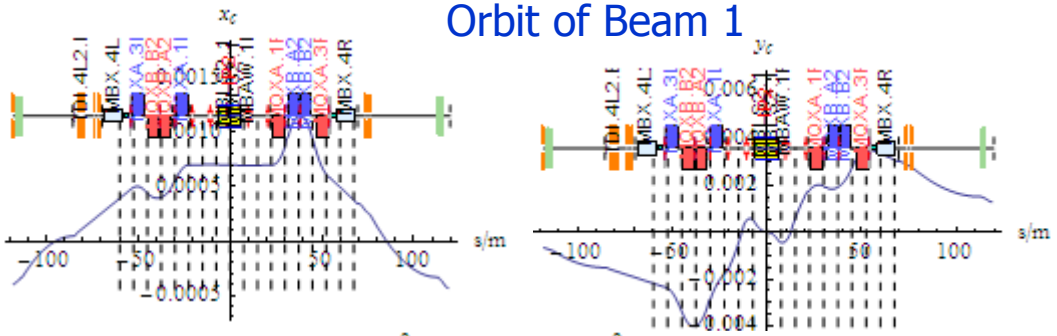
ALICE polarity reversal

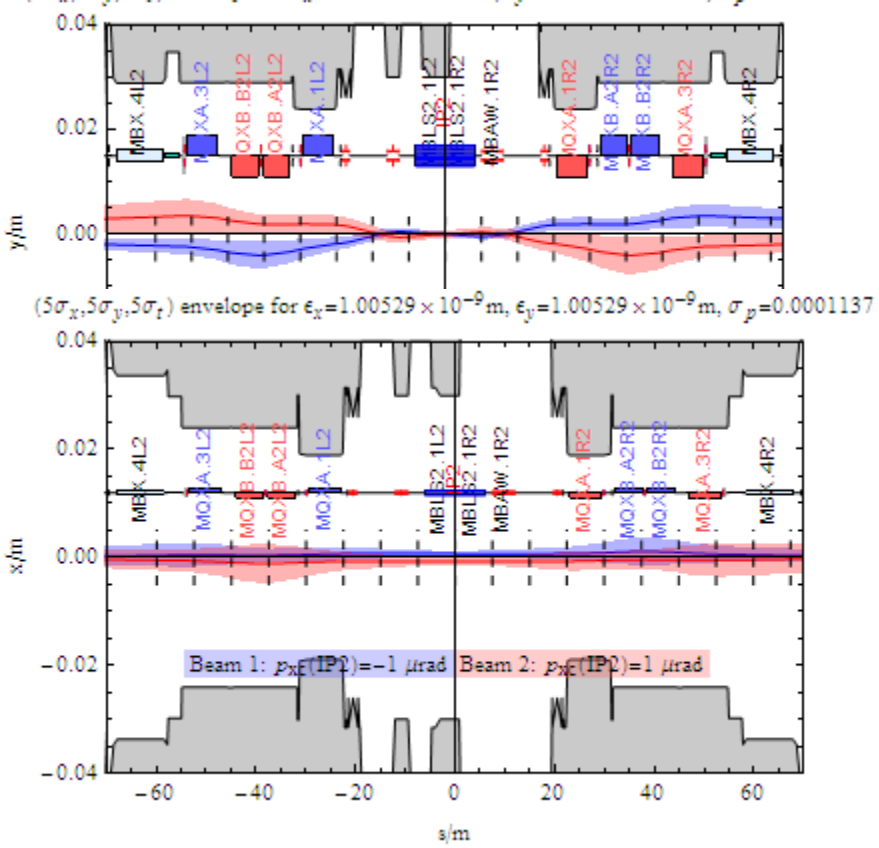
- ALICE want to reverse spectrometer polarity
  - Must also reverse external angle in physics
  - Must setup TCTs, orbit reference, interlocks, etc in IR2 for full cycle of injection, ramp, squeeze, collisions
- JW suggested shortcut by ramping with +ve external angle
  - Two bumps give opposite contributions to crossing angle
  - Separation is adequate before collision thanks to horizontal parallel separation (next slide)
  - (I didn't check ramp …)
- To get to physics (as for heavy ions), reverse external angle after ramp (no squeeze for IR2)
  - Means passing through state of zero external angle. Can we rely completely on horizontal separation ?

"Wrong" sign of external angle

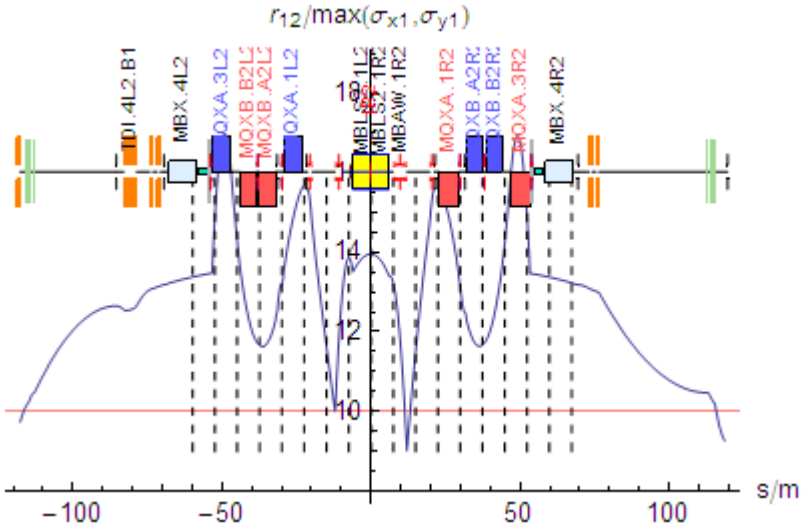
Orbit of Beam 1



p-p 3.5 TeV, after ramp, 50 ns spacing



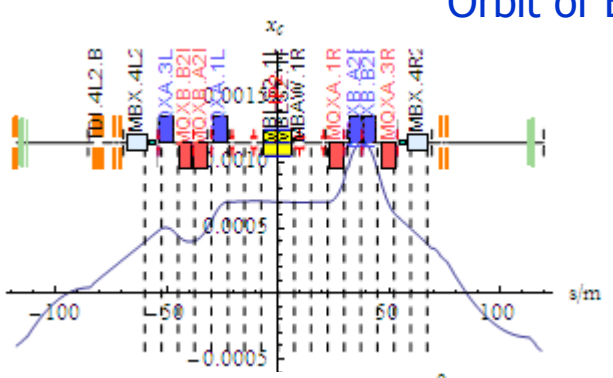
Separation of beams in sigma

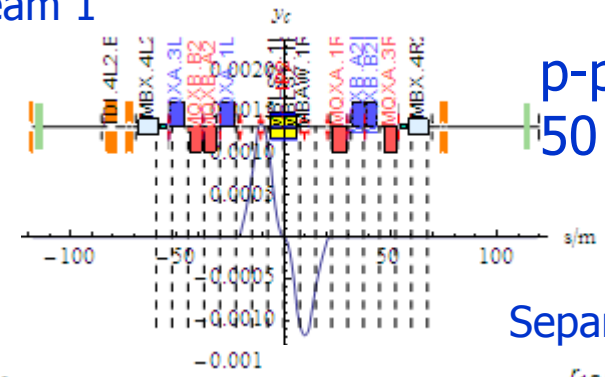


Works for this particular bunch spacing!

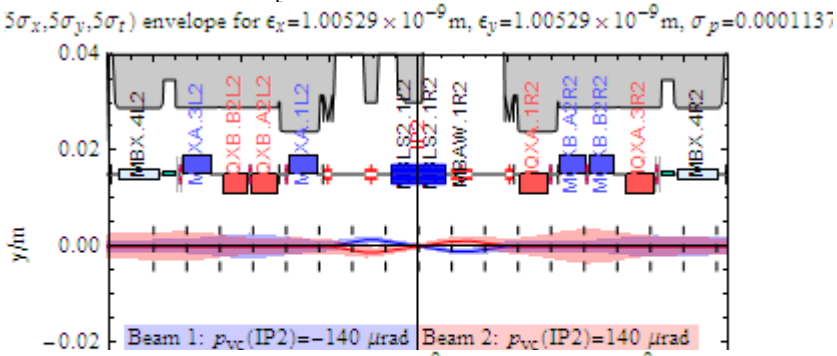
Intermediate case (zero external angle)

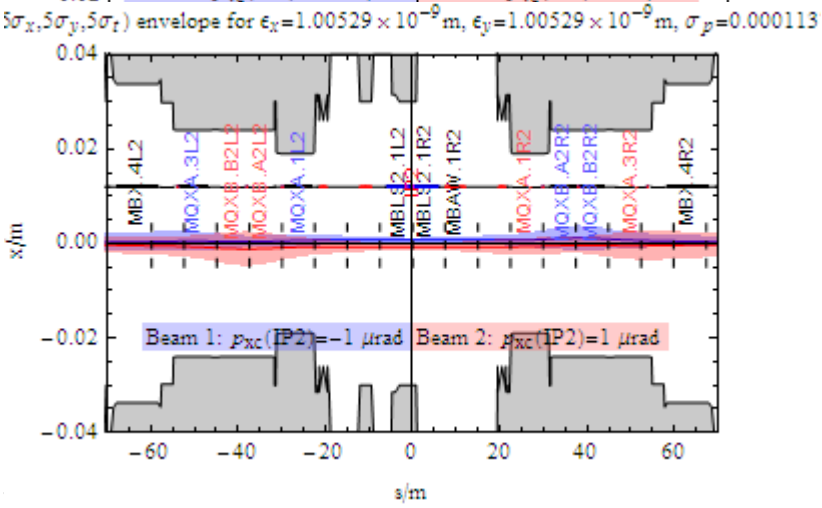
Orbit of Beam 1



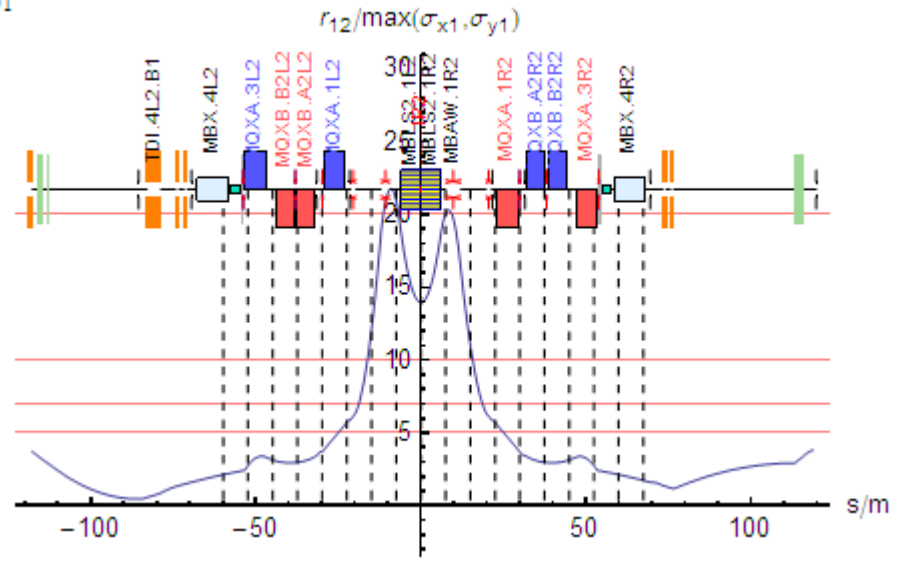


p-p 3.5 TeV, after ramp, 50 ns spacing





Separation of beams in sigma



Would need to increase parallel separation by factor 4 or more.

Likely problems in recombination chamber.

Conclusions and remarks

- Looks like there are no shortcuts
- Some implications for heavy ion run:
  - ALICE likely to want polarity reversal (?)
  - We will have squeeze in IR2
  - 100 ns spacing, lower charge/bunch – need to clarify minimum separation requirement, also important to minimise real crossing angle for ZDC: MD proposal in the works