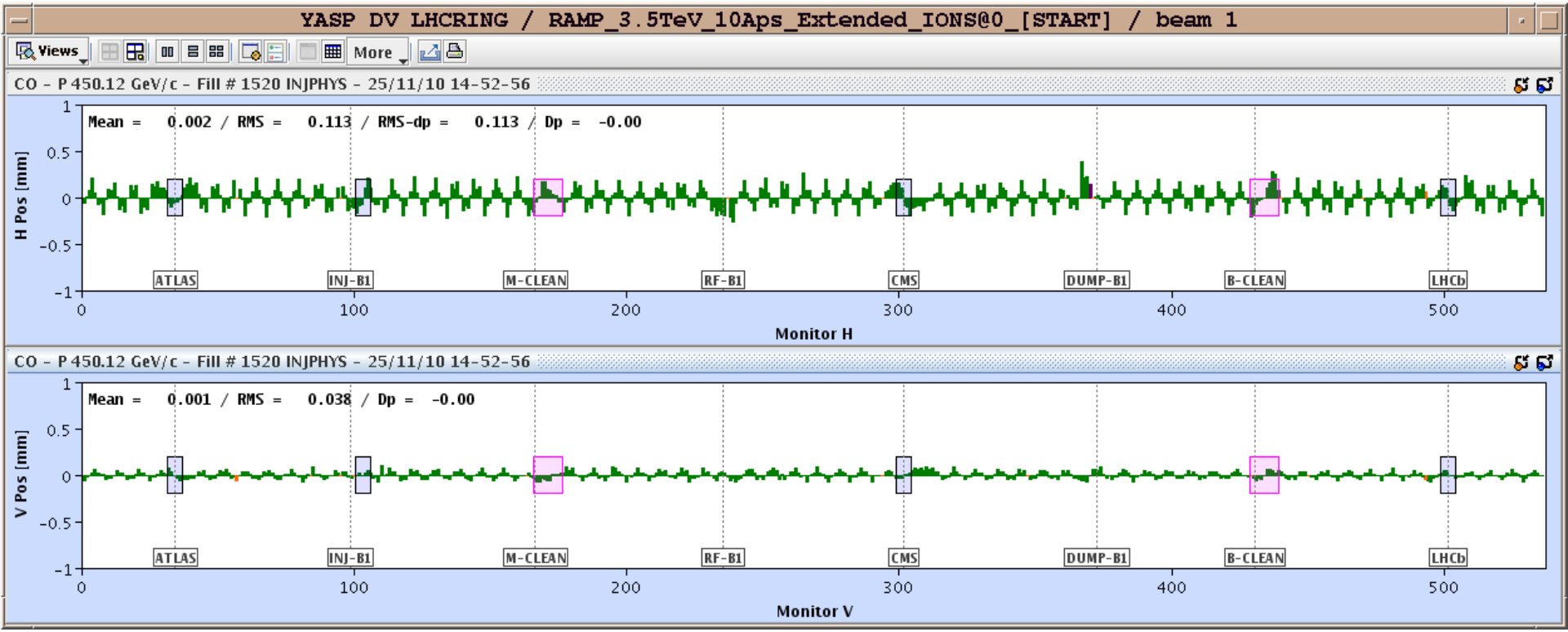
BGI magnets

- BGI magnets – arranged in compensating pairs (data from M. Sapinski).
  - **B = 0.215 T for PC @ 100 A** (in fact only 50 A in each magnet – in //).
  - Magnetic length = 0.85 m.
  - One magnet: BL = 0.183 Tm >> **kick = 122 μrad @ 450 GeV**
- The magnets are arranged in pairs to be ramped transparently – see next slides – and should therefore have no impact in case of powering failure (PC off).
- Presently the BGI PCs (RGMWH/V) are connected to the WIC (magnet protection) and to the BIS.
  - WIC in Pt4 is managing ONLY the BGI circuits.
  - **A powering failure leads to a beam dump.**

Proposal to disconnect the WIC (the BGIs) from the BIS.

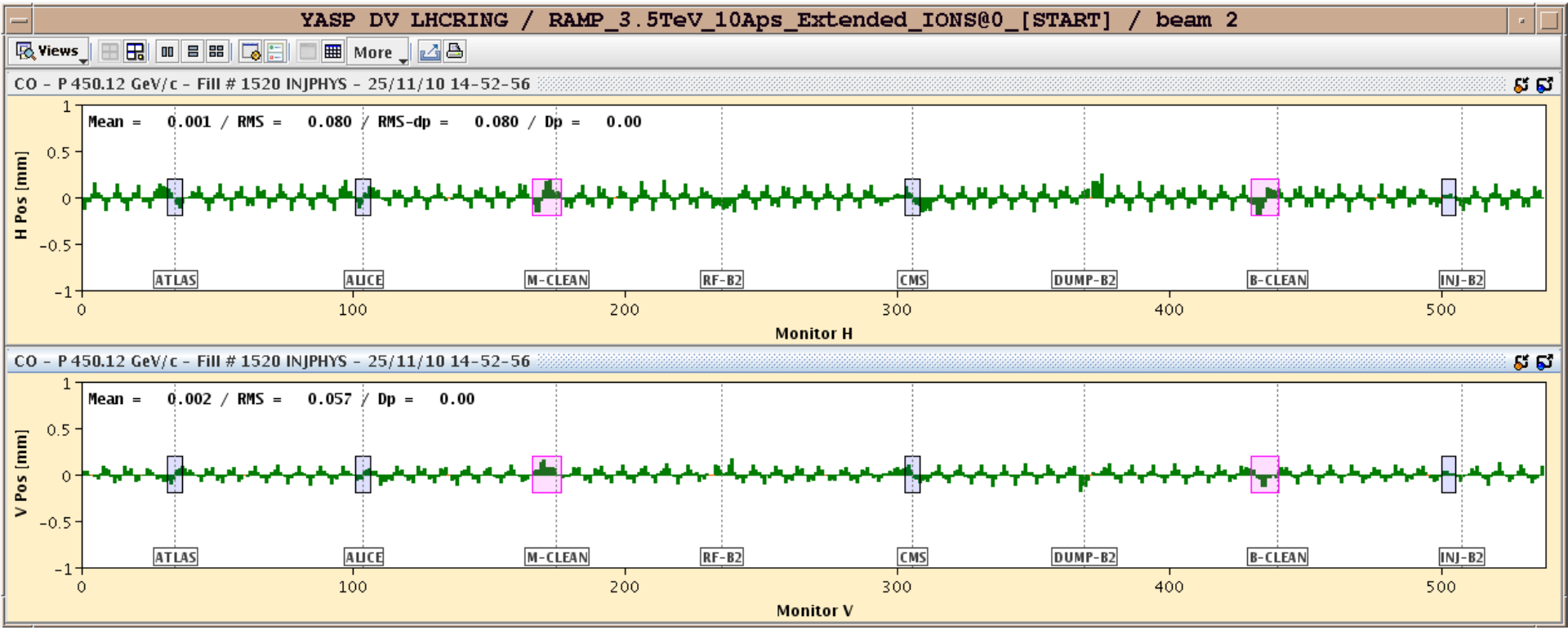
Beam 1 - orbit shift test

- Orbit difference 100 A – 20 A at 450 GeV.
  - Residual kicks equivalent to 0.5 – 1 μrad (~1% imbalance).



Beam 2 orbit shift

- Orbit difference 100 A – 20 A at 450 GeV.
  - Residual kicks equivalent to 0.5 – 1 μrad (~1% imbalance).



Summary

- RMS orbit differences at **injection** (Δ = 80 A):

Beam	Hor. RMS (μm)	Ver. RMS (mm)
1	113	38
2	80	57

- Quite minor orbit perturbations – we could therefore disconnect the IR4 WIC from the BIS (since it only handles the BGI magnets).