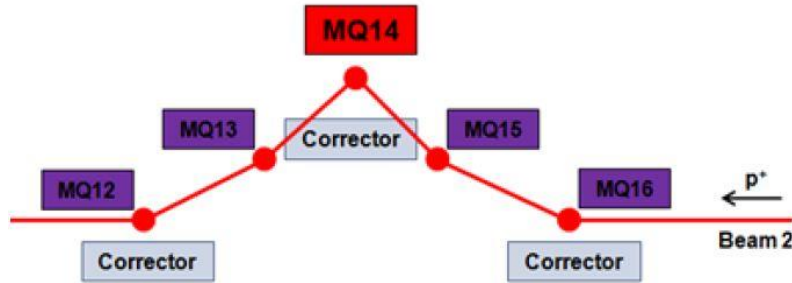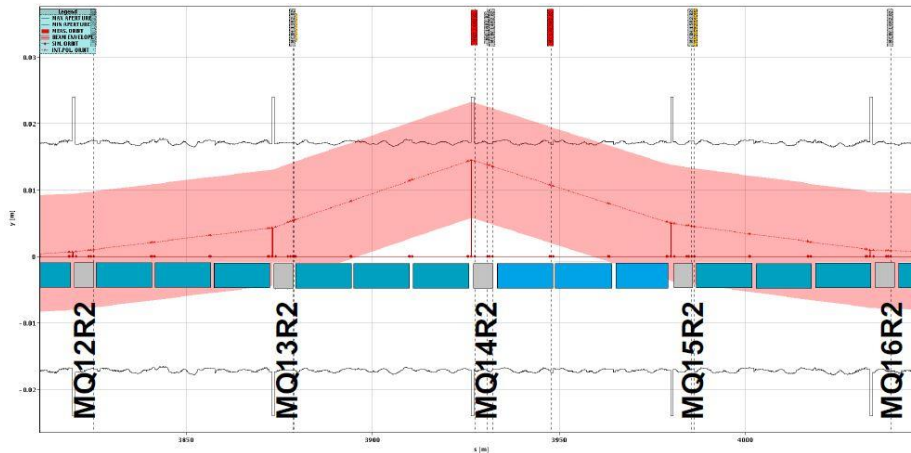# MAD-X Analysis of the Dynamic Orbit-Bump Quench Test of 2010

V. Chetvertkova, TE-MPE-PE

# Experiment



- Date: 17.10.2010 (20:23)

- Beam: 2

- Energy: 3.5 TeV

- Bump orientation: vertical

- Increasing bump amplitude

- Maximum deflection: 15 mm

- Intensity: 1.85e10 protons

- Lost on the MQ: 58%

- Duration: ~6 s

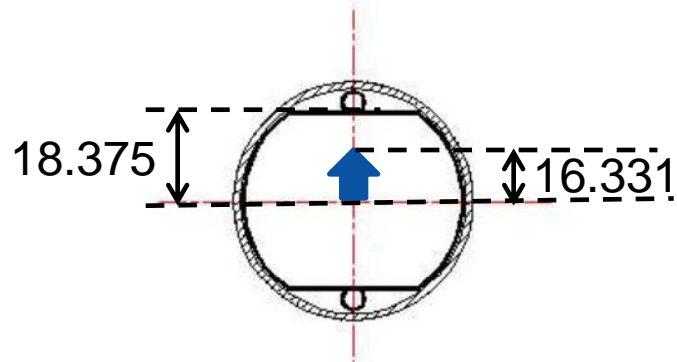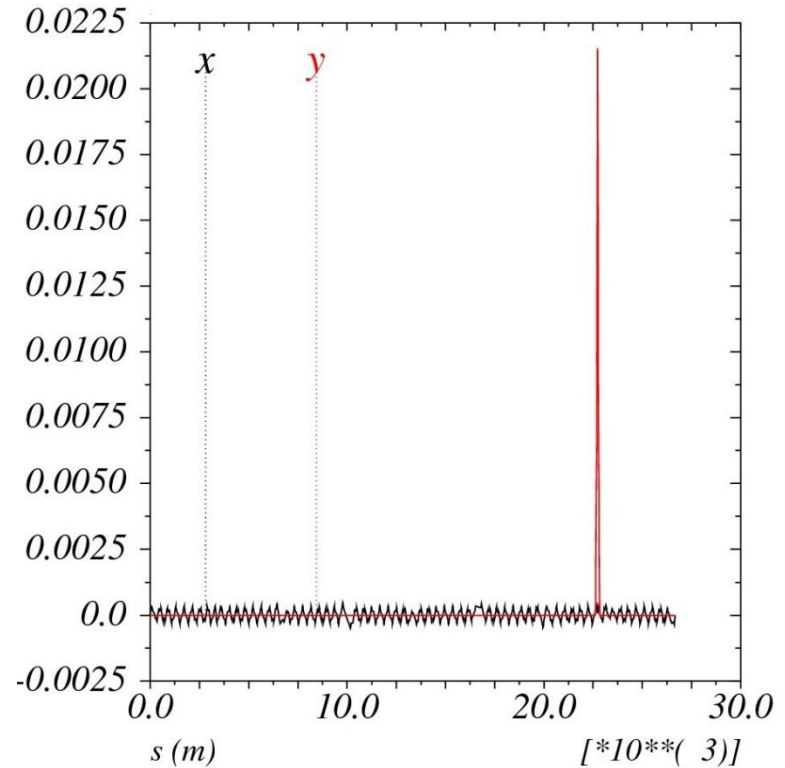[A. Priebe et al., Beam-induced quench test of the LHC main quadrupole, CERN-ATS-2011-058]
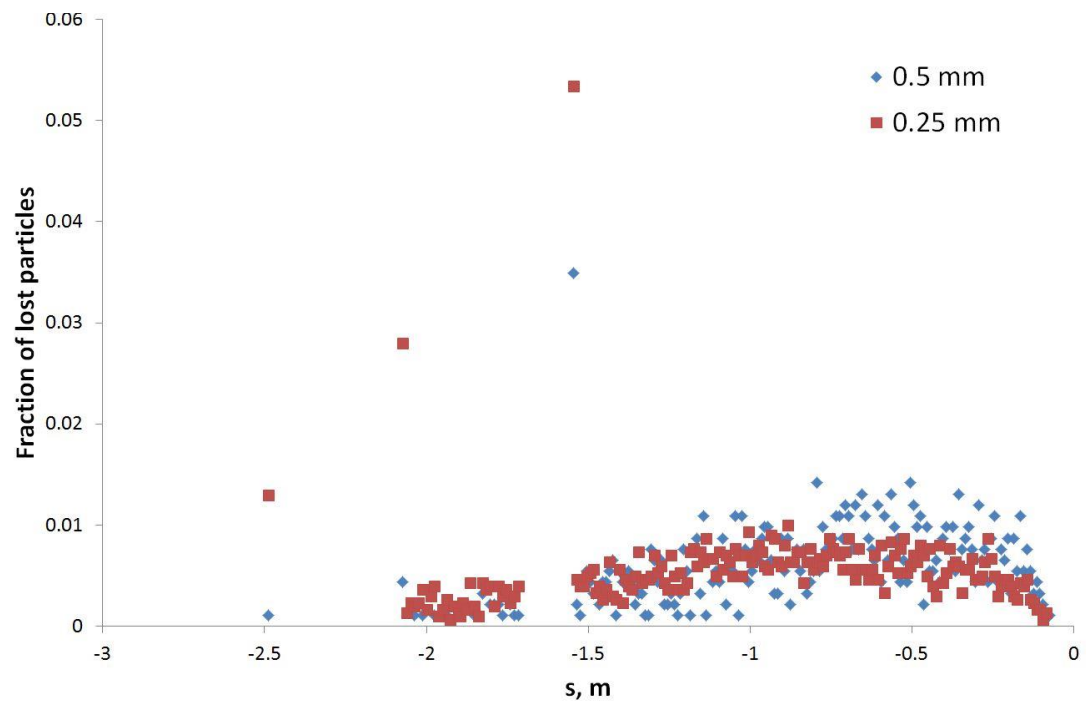
MCBV.14R2

| 0.647 | 0.369 |
|-------|-------|

MQ.14R2

| 3.1 |
|-----|

18.375    16.331

- Primary bump amplitude: 16.331 mm
- Increase of the bump amplitude every 100 turns

Beam size:

$\varepsilon_x = 6.1e\text{-}6$

$\varepsilon_y = 7.1e\text{-}6$

Bump amplitude:

$3.5\sigma_{exp}$
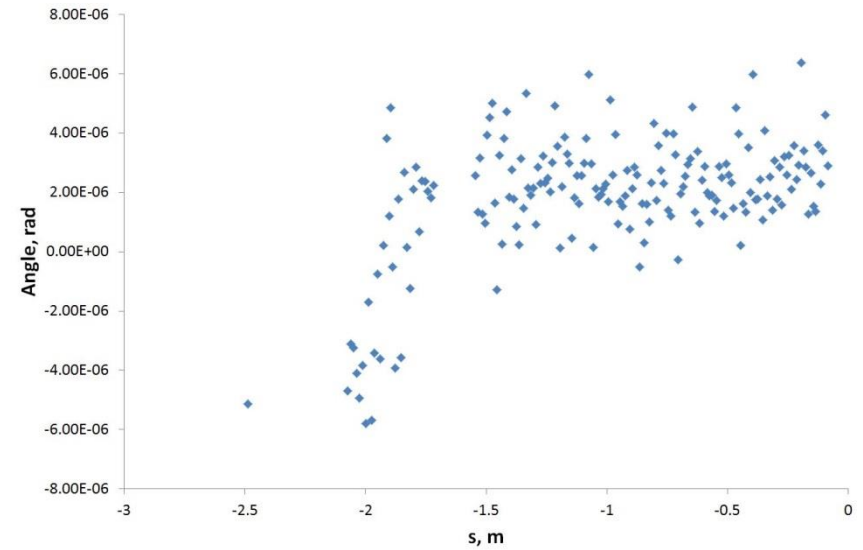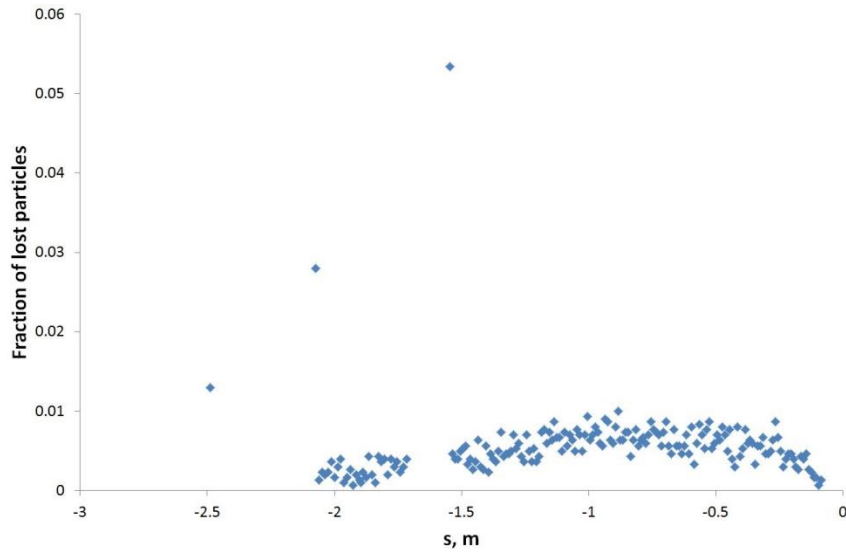
Tune:

$Q_x = 64.28$

$Q_y = 59.31$

**Conclusion:**

Bump amplitude **does not influence** the longitudinal distribution

- The beam loss is distributed between the MCBV.14R2-MS.14R2-MQ.14R2.

- Impact angle varies within the magnets – more statistics is needed.