Showering Studies for BLMs

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- **Idea:**

  detect shower particles outside cryostat induced by beam particle losses

  - **relation between beam particles and quenchlevels**
  - **correspondence between particle fluence outside cryostat and quenchlevels**

- **Method:**

  ➔ proton loss distribution: most likely position of losses

  misalignment, β_{max}

  ➔ proton loss shower simulation

  ➔ obtain detector signals per lost proton

➔ proposal for beam loss detectors

position, corresponding signals for quenchlimit.

With the

- **Aim**

➔ distinguish between 2 beams

➔ find out where loss has happened

Proton shower simulation

Geant 3.21

Dispersion Suppressor

➔ **Detailed simulation of magnet geometry, Version 6.3**

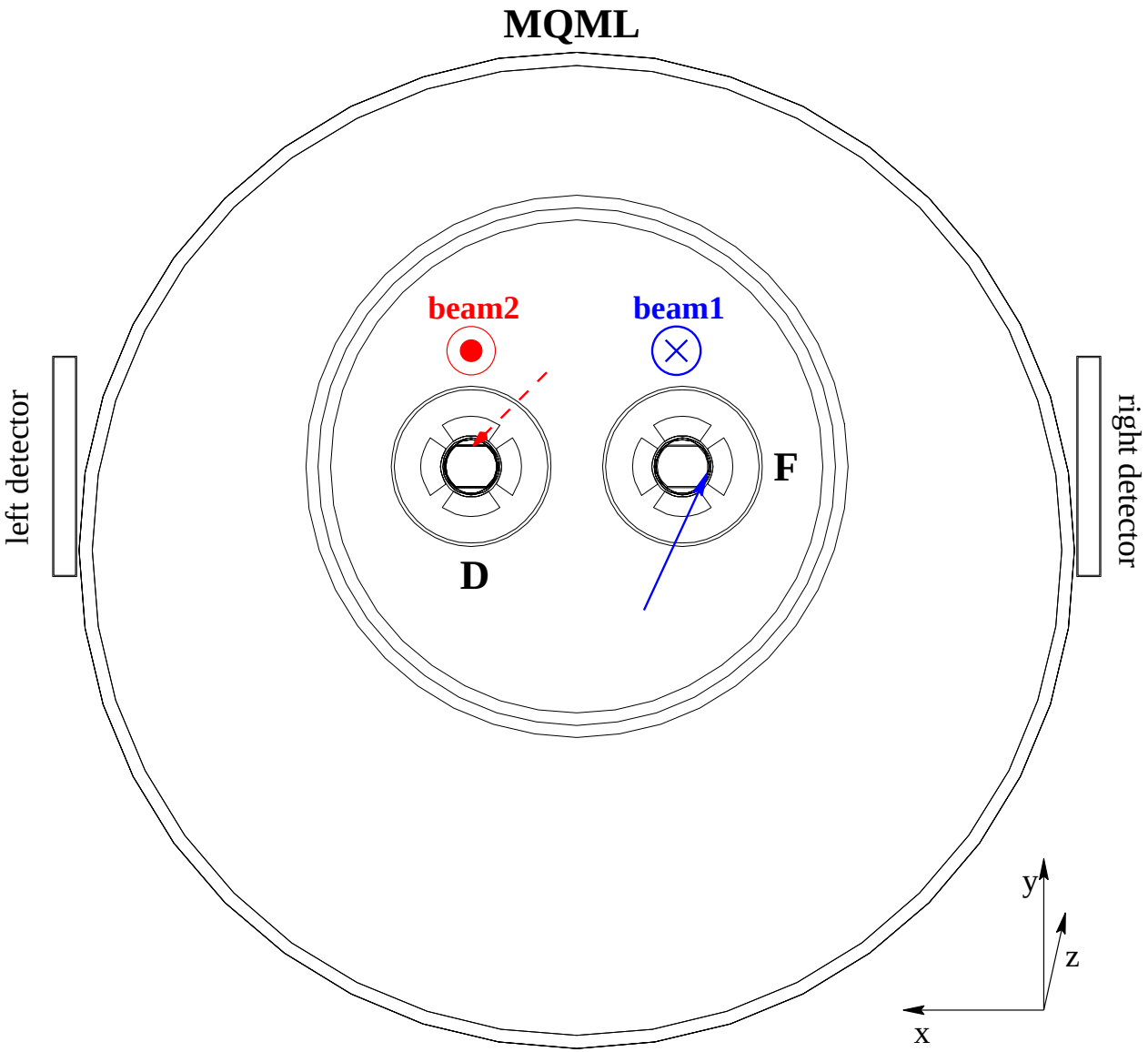
MB,MQ,MQM, MQML,MQMC,MQTL,
MCBCB,MSCBA,MCDO,MCS,BPOM,

➔ **magnetic field maps for Quadrupoles, Dipoles (Roxie)**

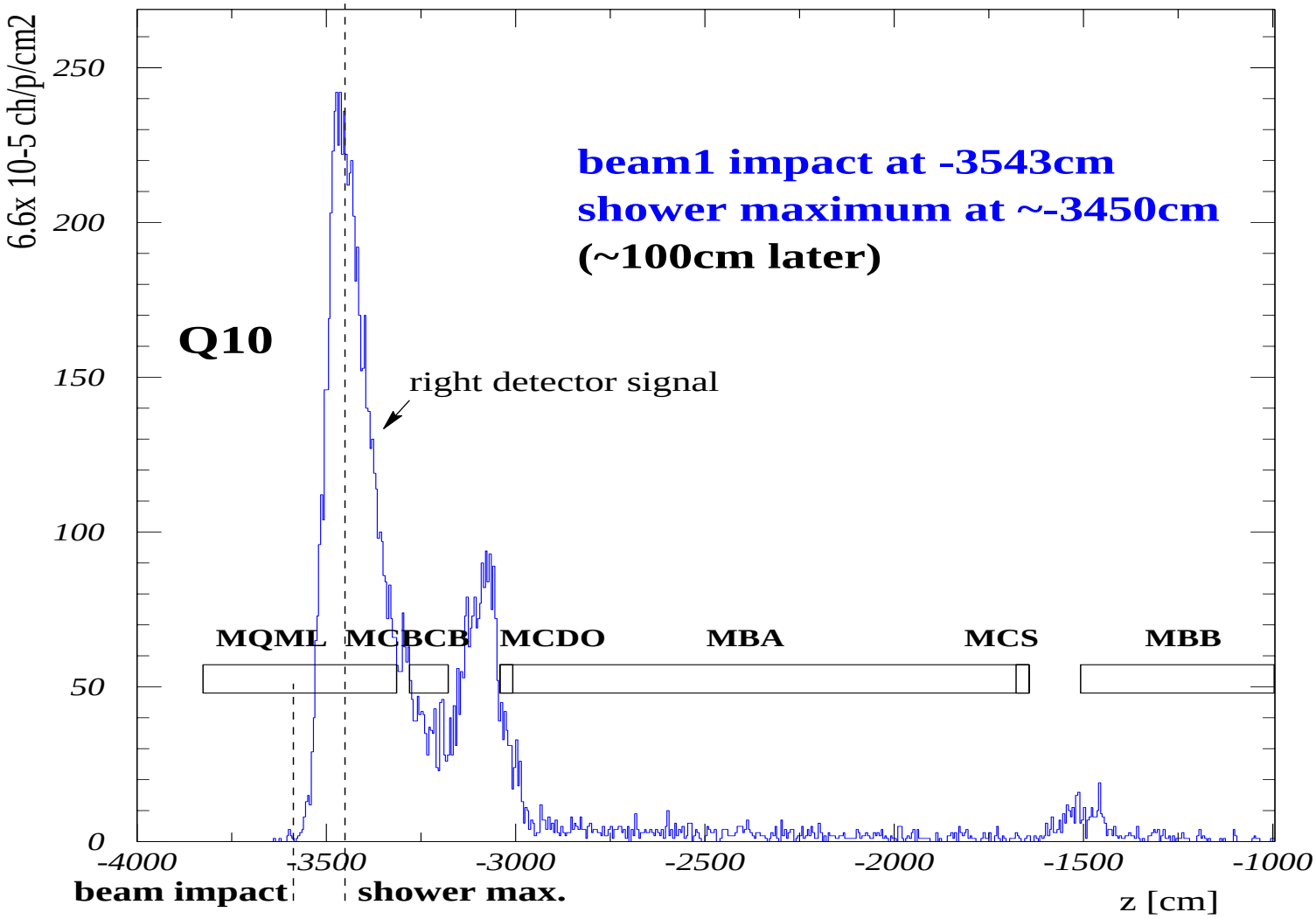
point loss

- **incident angle of 0.25mrad**
- **losses in horizontal (QF) and vertical plane (QD) of beam screen**
- **150 events with same impact parameters**

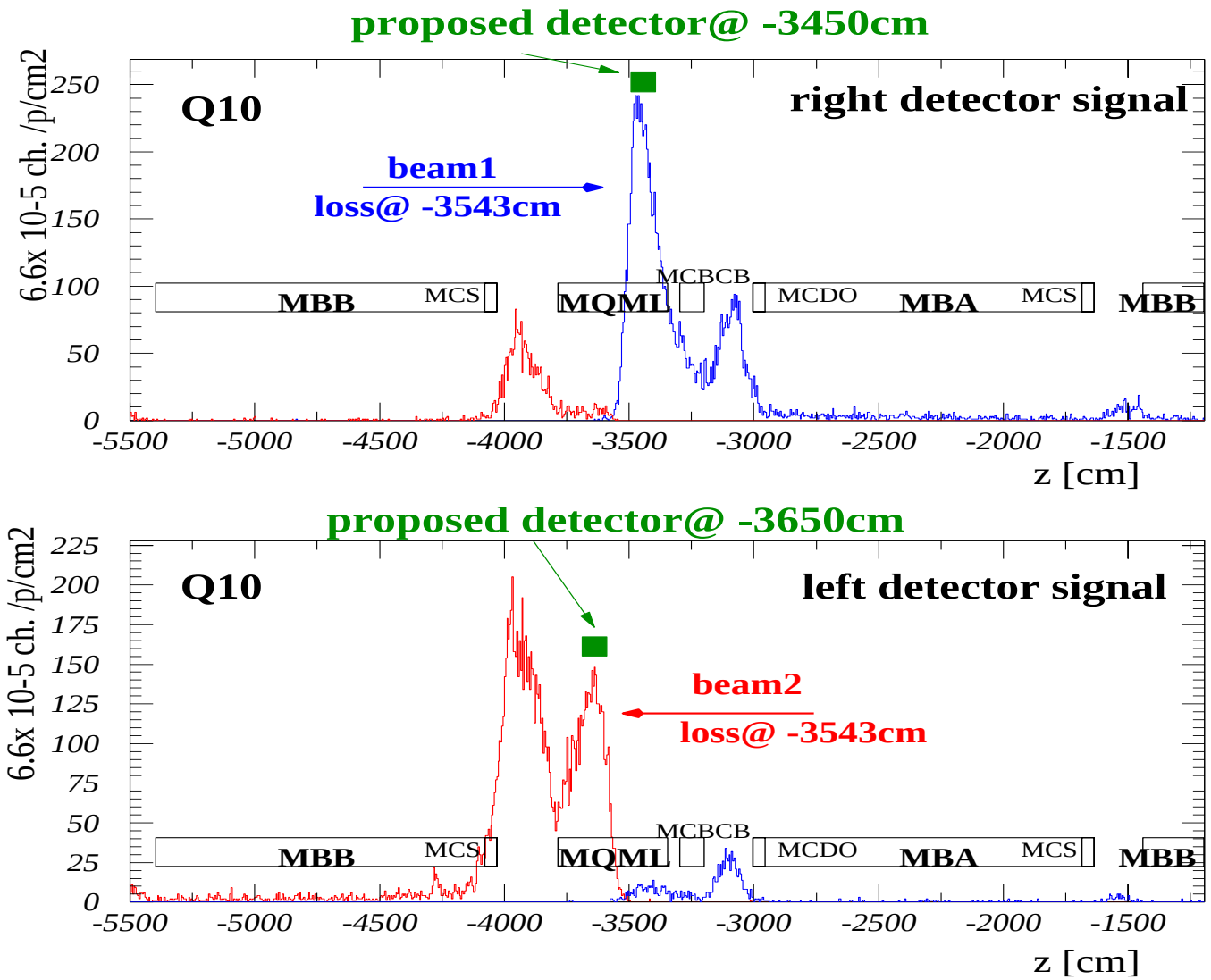
MQML in Q10



Typical shower distribution of point-loss in MQML



Impact of beam1 and beam2, cross-talk...



But,

- **Longitudinal proton loss distribution will modify shower distribution significantly!**

Proton loss density in DS