
PSB Period 8

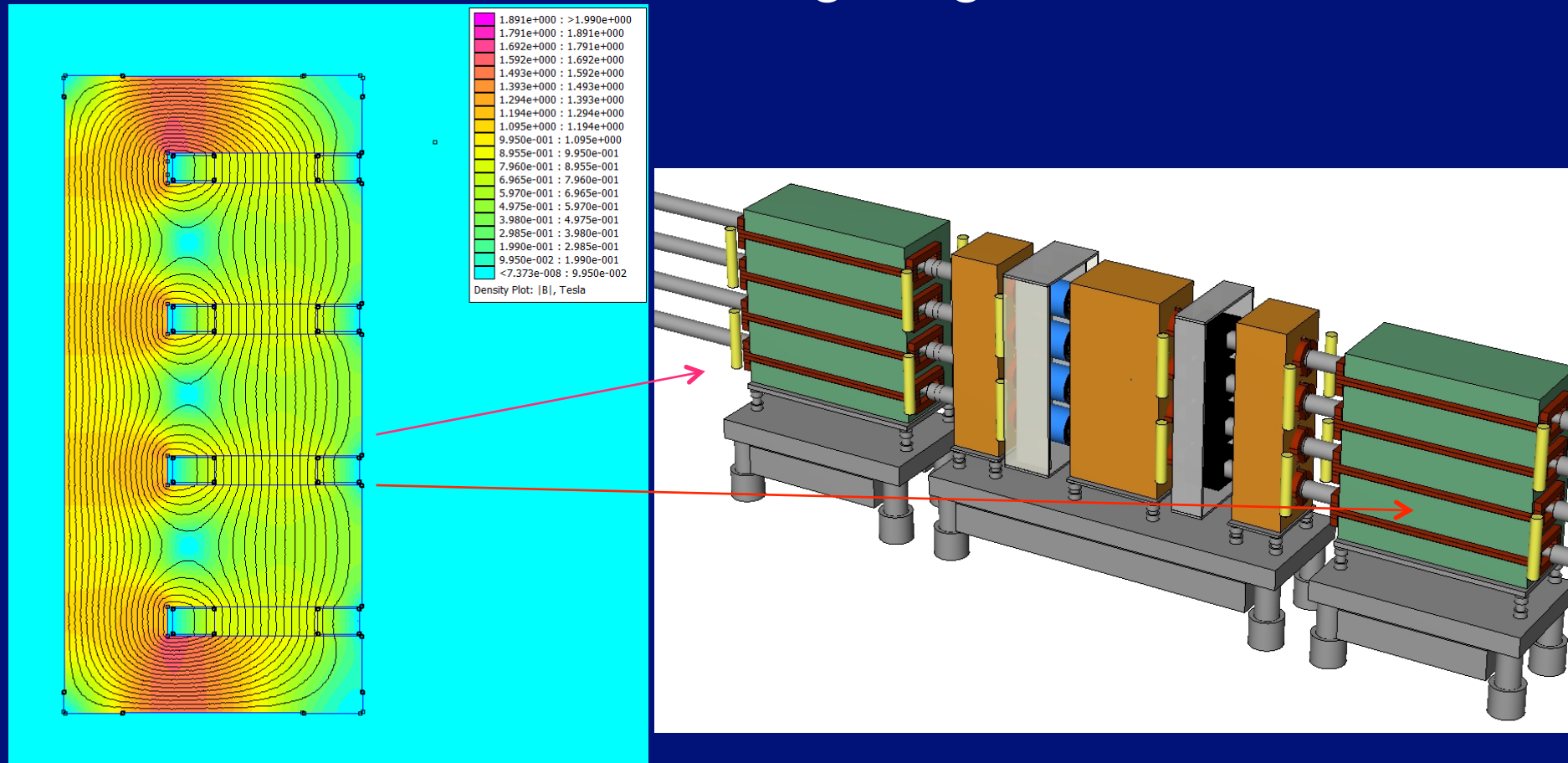
BLM response to losses of protons
in a beamscope window

Results with B-field in the two Dipoles

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CERN, March 28, 2011

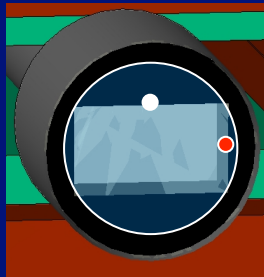
PSB Period 8: Field map of the Booster main bending magnets added



Field map from Antony et al.

Beam Loss Monitors – LHC type altogether 24, on both sides of the beam

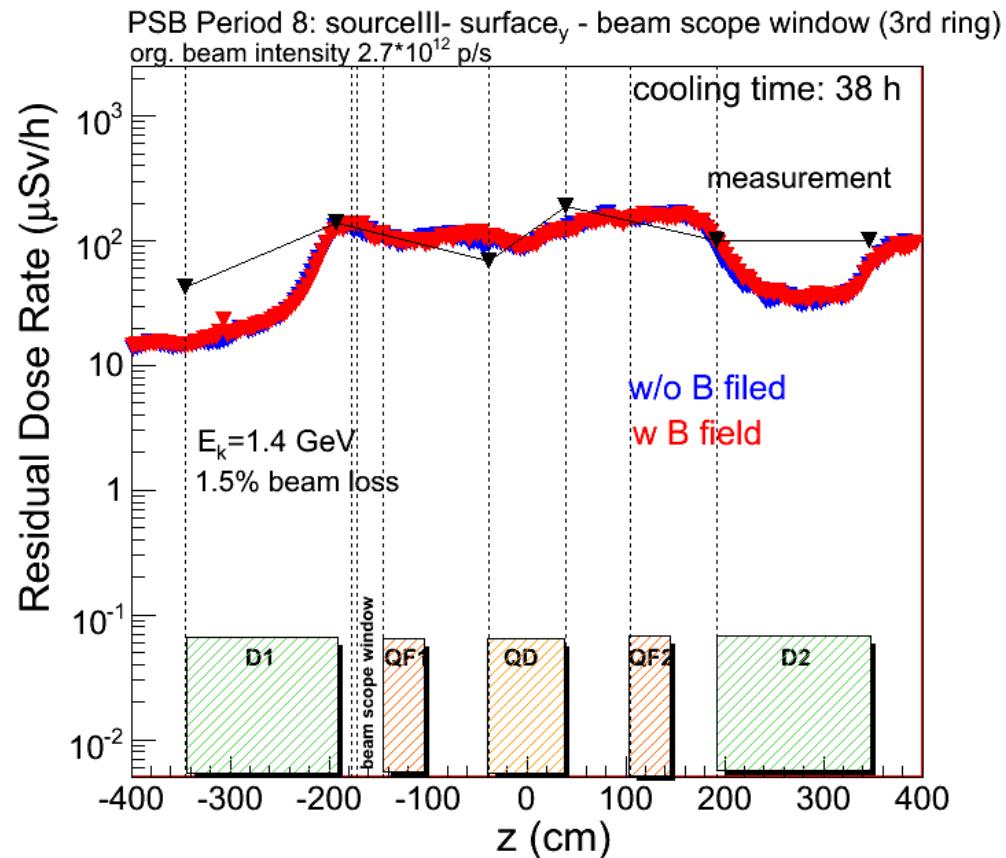
Compare results **with and without magnetic field** under the assumption of an impact point in the horizontal (bending) plane of the 3rd ring, **i.e. source III**



- source I : interaction in the volume
impact points: front face of the BS window, distributed in x and y along the white circle
- source II: interaction along the surface
impact point: front face of the BS window, point-like in x and y (white spot)
- **source III**: interaction along the surface
impact point: front face of the BS window, point-like in x and y (red spot)

Residual Ambient Dose-Eq Rate ($\mu\text{Sv/h}$) after 38h Comparison: with and without B field in Dipoles

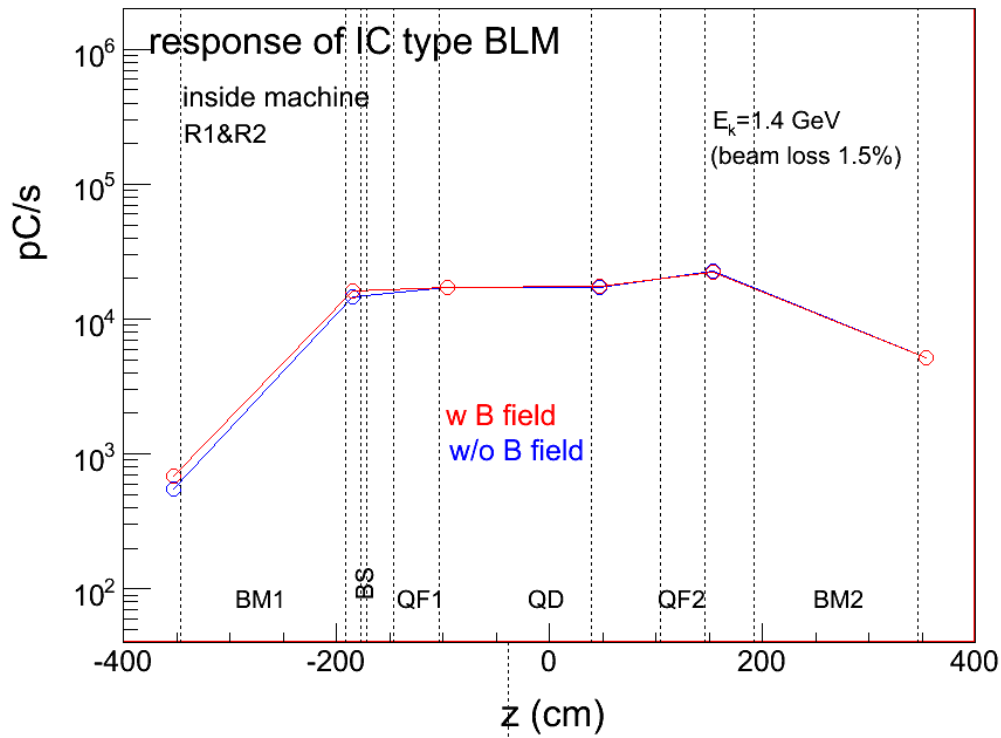
source III – surface



Hardly any difference of $H^*(10)$ w and w/o B-field in the 2 dipole magnets

Response of the IC-type BLM in pC/s to 1.5% beam loss inside the beamscope window of the 3rd Ring for $E_k=1.4$ GeV with and without B-field in the two Dipoles

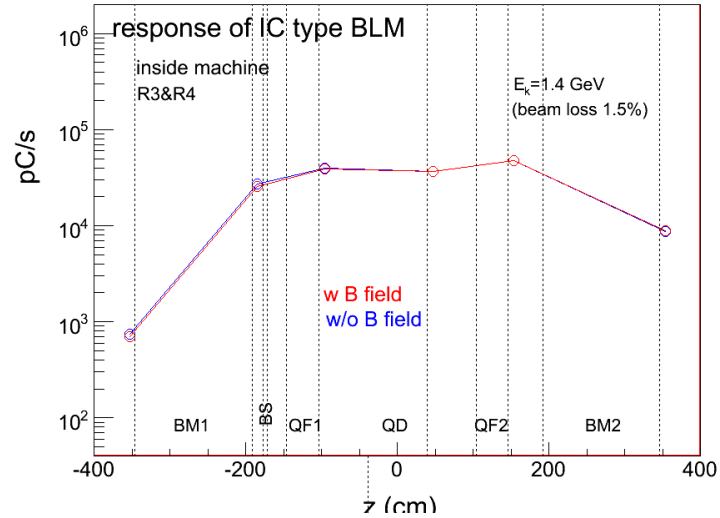
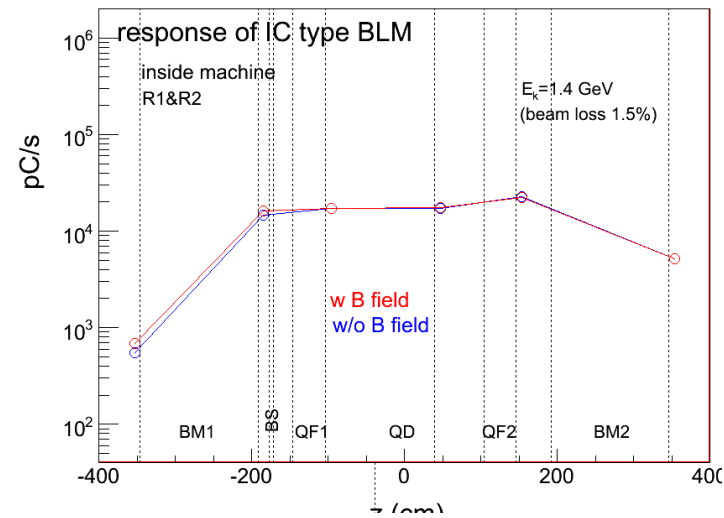
example source III (surface)



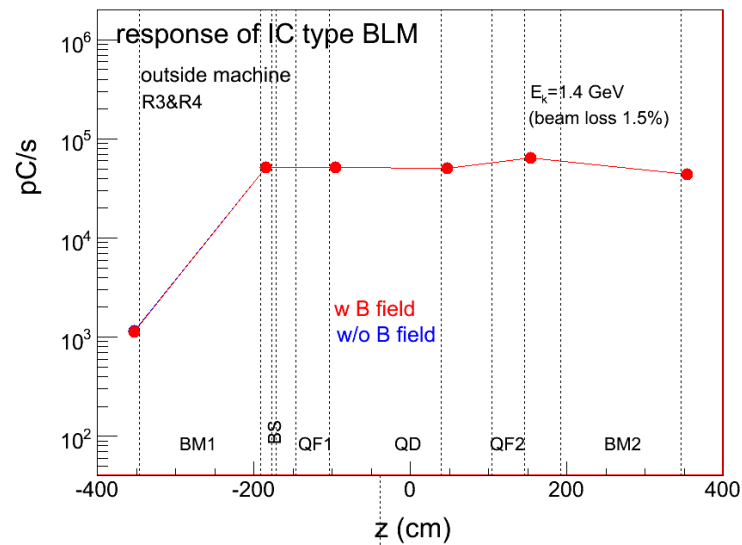
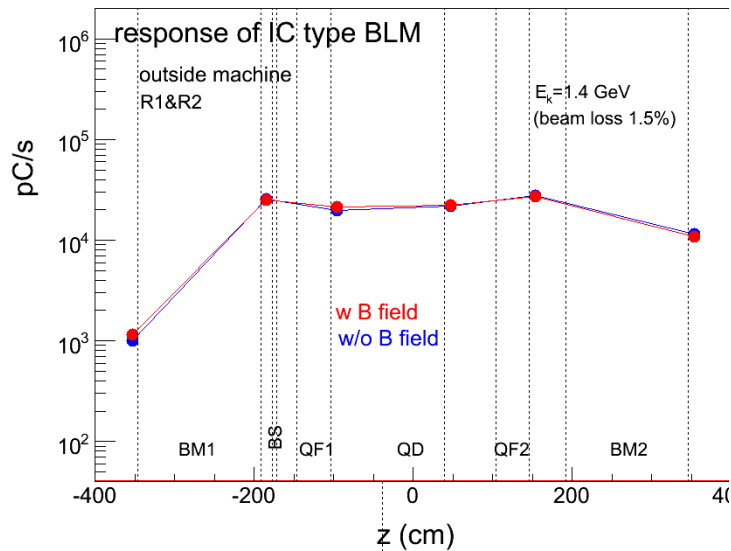
Currents hardly distinguishable w and w/o magnetic field in the dipoles same for dose (not shown)

Response of the IC-type BLM in pC/s to 1.5% beam loss

Comparison: w and w/o B-filed in the two Dipoles



example source III



Currents hardly distinguishable w and w/o magnetic field in the dipoles