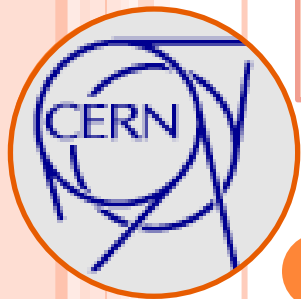


MD REQUEST FOR

QUENCH TEST AT NOMINAL ENERGY AT C14R2 WITH ORBITAL BUMPS



Agnieszka Priebe, Bernd Dehning, Mariusz Sapinski,
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Rudiger Schmidt, Jens Steckert, Knud Dahlerup-Petersen,
Krzysztof Brodziński, Markus Brugger, Marco Calvi,
Ralph Steinhagen, Mateusz Bednarek

CERN

BE-BI-BL

FIRST THOUGHTS ON MD PRIORITIES FOR 2012

By Frank Zimmermann, Ralph Assmann, Giulia Papotti, Evian 2011

Quench Threshold MD Requests (56 h)

Quench margin at top energy in DS of IR7 & IR3: 16 h

Quench limit investigations with beam at injection at
Q6.L8 & Q4.L6: 16 h

**Wire scanner quench test at flat top for ms losses:
8 h**

← UFOs

Quench test at injection energy for MQ/MB with
horizontal bump: 8 h

Quench test at nominal energy at C14R2 with bumps:
8 h

- Controlled losses
- Previous tests have resulted with quenching (feasible !)

Steady State Losses !!!

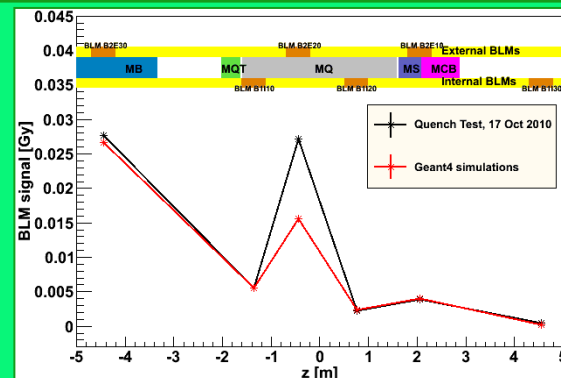
2

QUENCH TEST AT NOMINAL ENERGY AT C14R2 WITH BUMPS

Done: 3-corrector orbital bump

- Quench Test (17 Oct 2010) 3.5 TeV, beam 2, vertical bump
- Loss duration: ≈ 5.6 s
- MQ was quenched

No fully succesful quench in 2011



Plan: Beam bump controlled by a BLM orbit feedback ← Ralph Steinhagen

→ Steady state losses

- Loss duration: ~ 1 minute
- 2 stages:

**NEW
IDEA**

- magnet quench with 4 TeV (→ BLM signal S)
- operation at 90 % of S
- additional 5 BLMs will be install on the cryostats
- 2 mobile BLMs will be used for RadMons studies
- new system for QPS (faster, higher resolution) will be used
- observation of energy deposition in a magnet (cryogenics measurements)

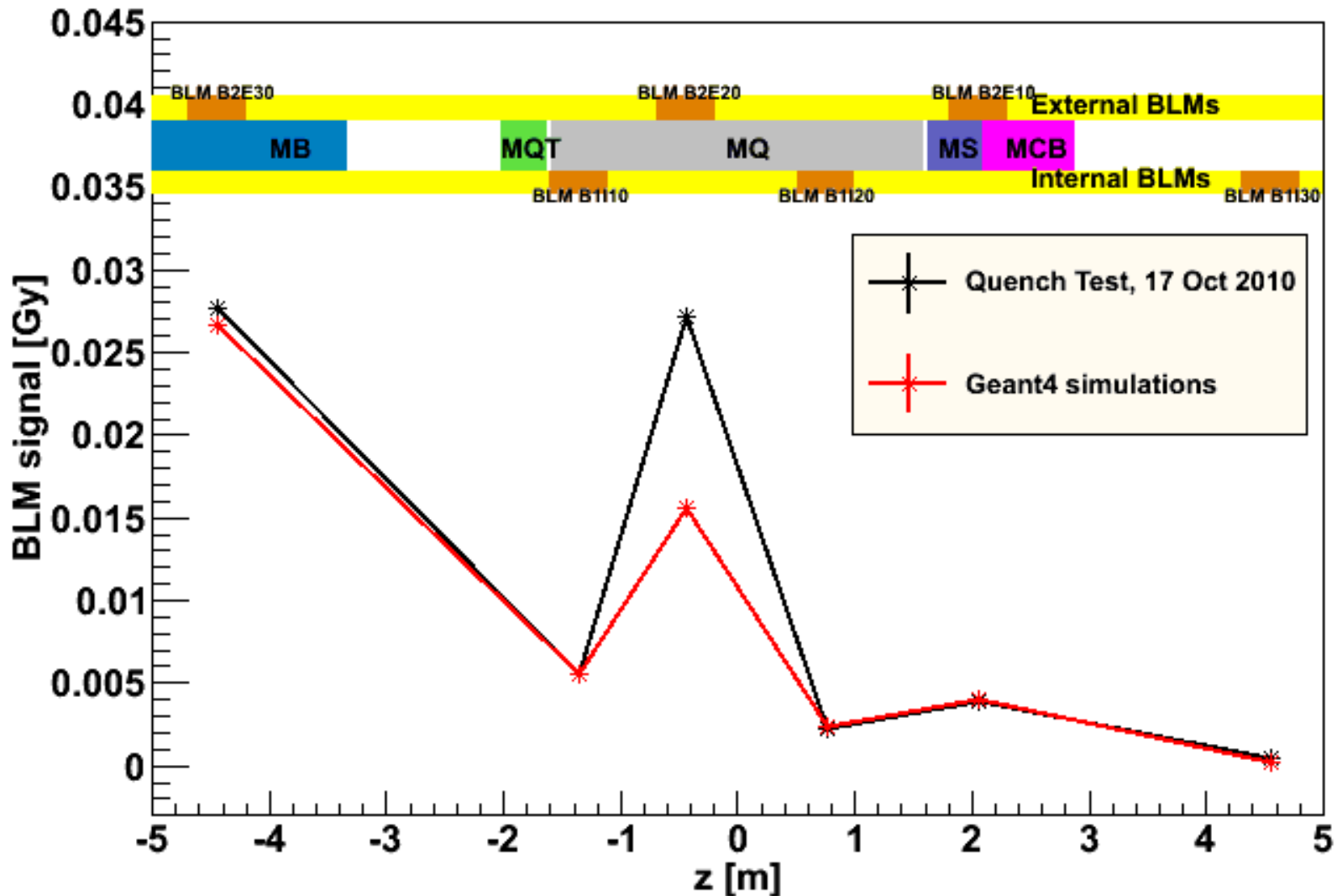
Why?

- we don't have experiments for steady state losses (are the set BLM thresholds OK?)
- to improve statistics for nominal energy
- we have Geant4 simulations prepared ☺
- required studies for LHC upgrades and future magnet technologies

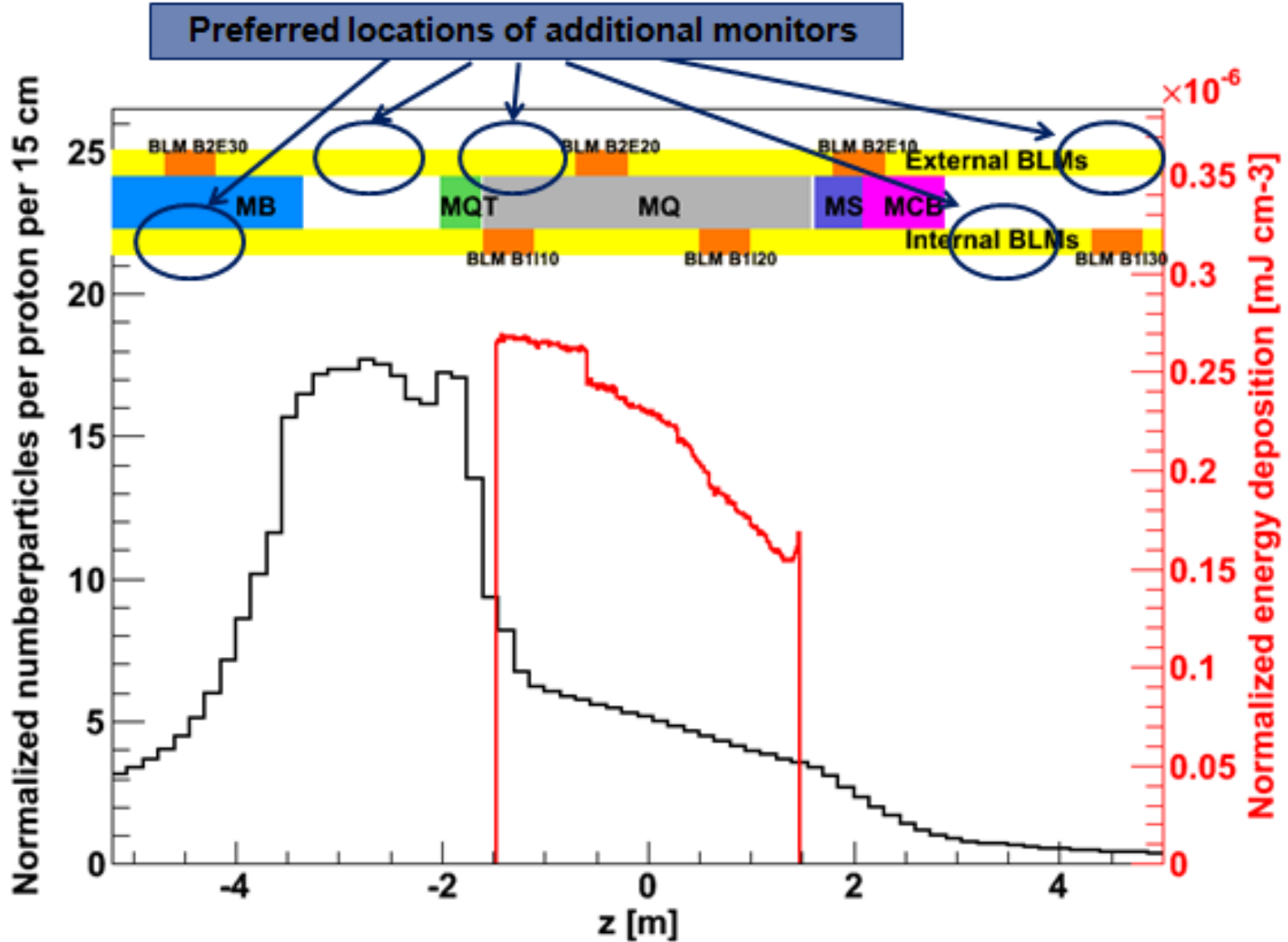
MULTI – LEVEL STUDIES

Thank you for your attention !!!

QUENCH TEST 17 Oct 2010, 3.5 TeV, BEAM 2, VERTICAL BUMP



PROPOSAL FOR NEW BLMs



QUENCH TEST AT NOMINAL ENERGY AT C14R2 WITH BUMPS

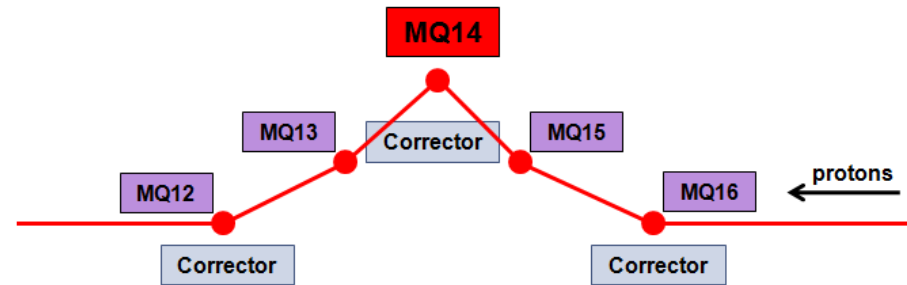
3-corrector orbital bump

Magnet quench

BLM threshold value

Losses of 90% of the threshold

Feedback system



Steady State Losses !!!

Loss timescale: ~1 minute

Additionally: feedback for data acquisition

NEW IDEA

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