

# LHC Transverse profile monitors studies

## (MD on May 6<sup>th</sup>, 2011)

**Instruments:** Wire Scanners, BSRT, BGI

**Participants:** E. Bravin, A. Boccardi, B. Dehning, J. Emery, T. Lefevre, J-J. Gras, A. Jeff, A. Rabiller, **F. Roncarolo**, M. Sapinski, V. Kain, M. Pojer, H. Bartosik, B. Salvant



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Keywords: LHC, transverse profile, transverse emittance, BSRT, BGI, WS

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### Summary

This note contains the preliminary results of the LHC MD that took place on 6 May-2011 (from 2 to 10 a.m.), dedicated to study Wire Scanners (WS), Synchrotron Radiation (BSRT) and Beam Gas Ionization (BGI) monitors. The MD aimed at performing different studies on the individual monitors as well as at cross calibrating them with beams in stables conditions, composed of bunches with different transverse emittances.

At the same time, it was possible to perform calibration studies with the Abort Gap (AGM) and Longitudinal Density (LDM) monitors that share the extracted light with the BSRT.

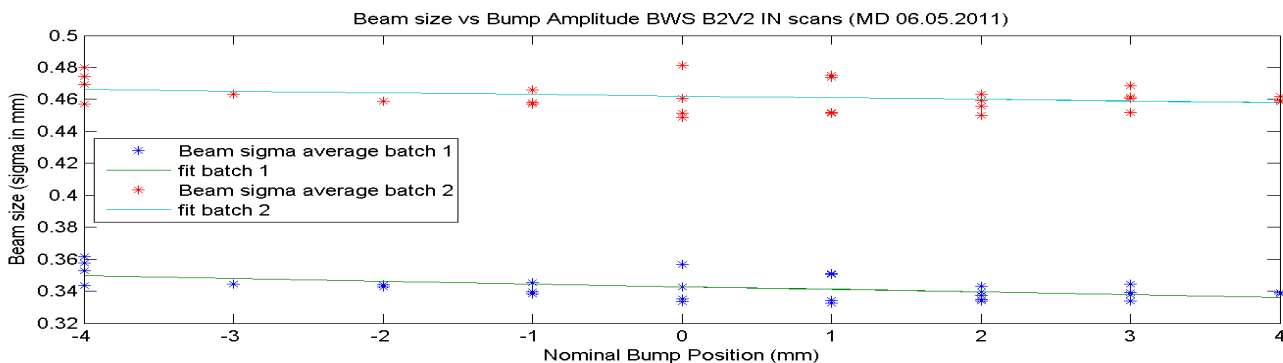
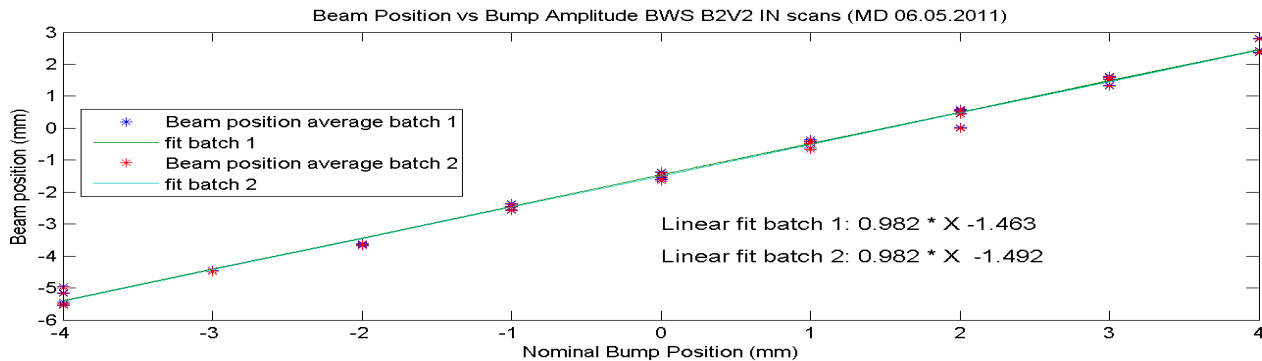
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*Note is being written, 20 pages already. We have a lot of data to analyse, not everything will be analyzed now.*

# Wire Scanner

## Objectives:

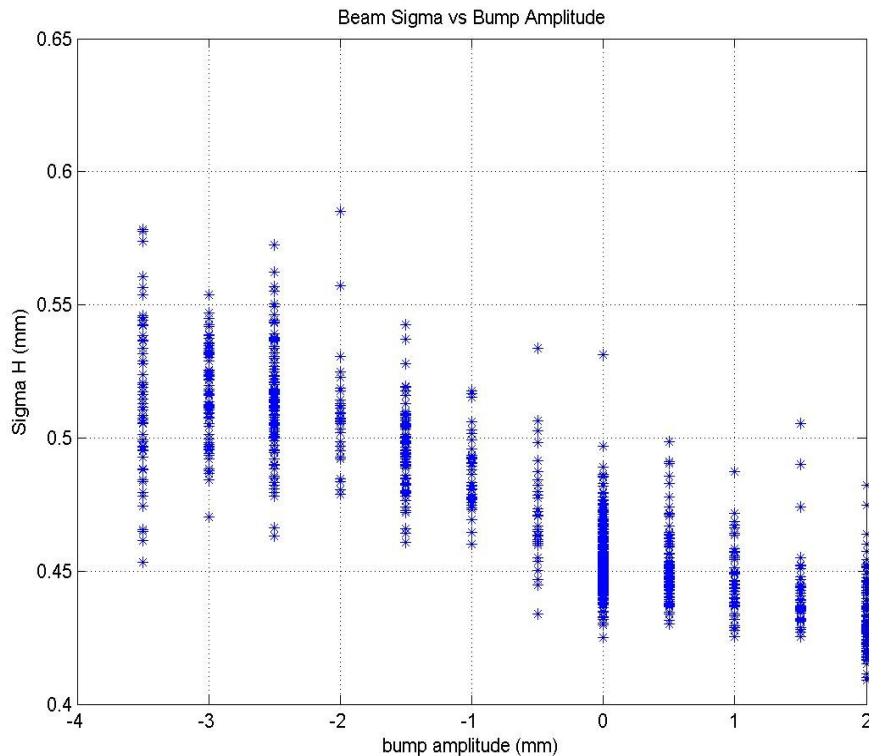
- Sensitivity of the beam size measurement to PM gain and filter used
- Turn vs. bunch mode
- Bunch mode cross-talk
- Calibration with orbital bumps
- In addition verification of BLM signal change with orbital bump (WS quench MD)



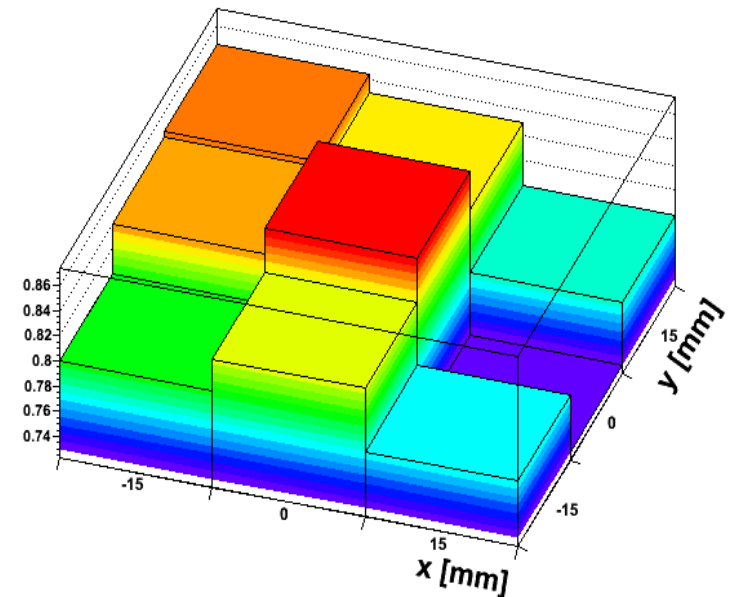
# Synchrotron Light Monitor

## Objectives:

- Find optimal focusing (two movable stages)
- Steering maps (changing position of the light spot on camera sensor)
- Calibration with orbital bumps



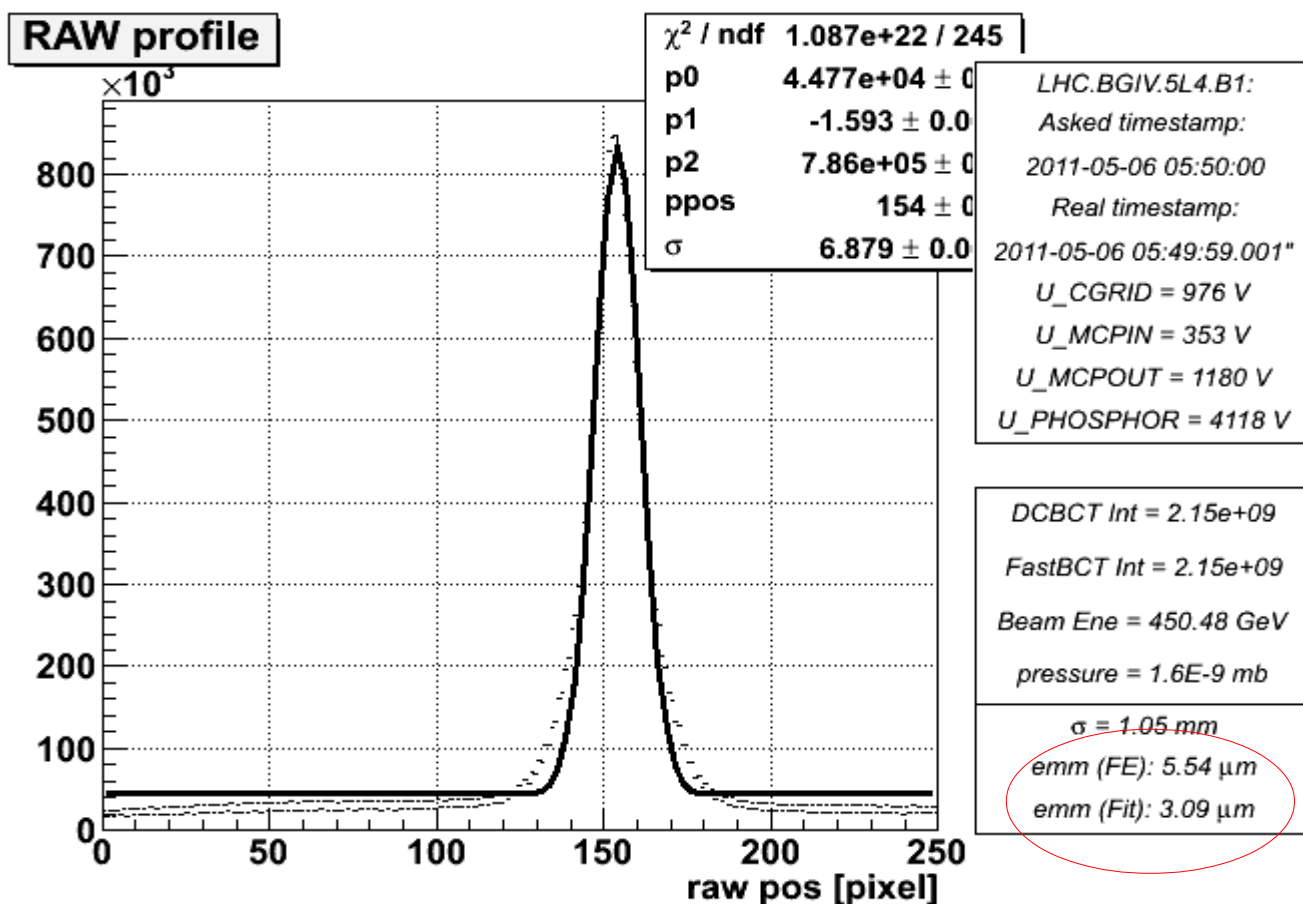
Beam 2 - Beam Size x



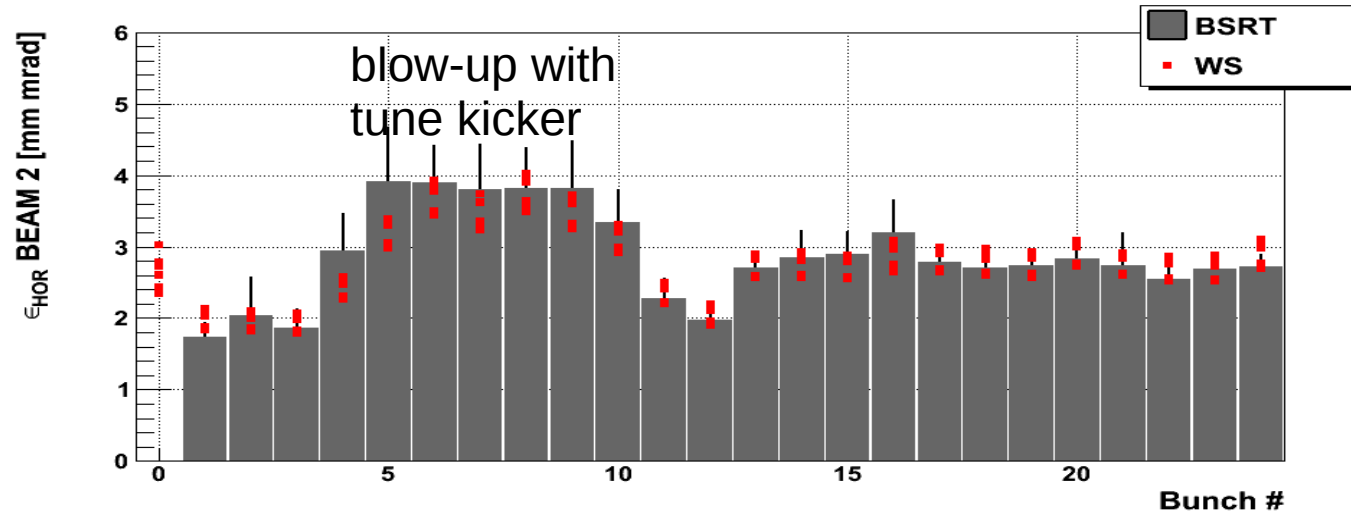
# Beam Gas Ionization Monitor

## Objectives:

- Scan of parameters (gas pressure, HV, camera gain)
- Calibration with orbital bumps
- For the moment analysis concentrated on cross-calibration issues...



# Cross-calibration of the three instruments and why we need another MD



## Next MD:

- We don't have any good beam to cross-calibrate WS/BSRT with BGI
- There are effects in all three detectors which need further investigations

